THE AMERICAN GAS LIGHT JOURNAL

PUBLISHING OFFICE No. 42 PINE STREET

DEVOTED TO THE INTERESTS OF ILLUMINATION, HEATING, MECHANICAL, CHEMICAL AND GENERAL SCIENCE.

VOLUME XC., No. 22. Whole No. 1,773. | NEW YORK, MONDAY, MAY 31, 1909. | $3 PER ANNUM, IN ADVANCE.

A. M. CALLENDER & CO., Proprietors. C. H. WADELTON, Manager. THOMAS J. CUNNINGHAM and ELBERT P. CALLENDER, Editors.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND-CLASS MATTER.

CONTENTS.

An Asterisk (*) Denotes an Illustrated Article.

OFFICIAL NOTICES—

Fifth Annual Meeting, Iowa District Gas Association..... 966

Second Annual Meeting, Canadian Gas Association..... 965

NOTICES—

Wrinkle Department, American Gas Institute..... 965

Our Half-Century Special Number..... 965

EDITORIALS—

Briefly Told..... 966

The Street Lighting Situation, Boston, Mass.—Fifth Annual Convention, Southwestern Electrical and Gas Association—Death of Mr. H. H. Rogers—Current Mention.

*Gas Plant Shop Notes, by "Engineer"..... 967

Proceedings, Thirty-ninth Annual Meeting, New England Association of Gas Engineers—Continued from Page 928..... 967

First Day, Afternoon Session—Discussing the Macbeth Paper on "Why the Gas Man Should be an Illuminating Engineer"—Second Day, Morning Session—A Question or Two—Street Lighting, by Mr. Edwin Garsia—Discussion—Report of Committee on President's Address—Report of Nominating Committee—The Adaptation of a Fireless Cooker to a Gas Range.

Proceedings, Fifth Annual Meeting, Illinois Gas Association—Continued from Page 929..... 972

Accidents: Their Cause, Prevention and the Settlement of Gas Claims, by Mr. C. S. Goodwill—Discussion.

*Gas Engines and High Pressure Fire Service Stations..... 976

BUREAU OF INFORMATION, THE AMERICAN GAS INSTITUTE..... 977

Question No. 50—Answer by the Bureau—Answer-at-Large, by Mr. H. W. Jones—Question No. 29—Answer by the Bureau—Question No. 52—Answer by the Bureau—New Question, No. 54.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 978

Mr. W. J. Murphy Goes Abroad—Manager Findlay is Branching Out—Personal—Annual Meeting, South Jersey Gas, Electric and Traction Company—Cheaper Gas for Jacksonville, Fla.—Directors Increased—Many Would Like the Job—Gas for Ocean Grove, N. J., Mayhap—Enlarging the Chicago Headquarters, the Mueller Mfg. Co.—Col. John Jacob Astor has Another Invention Movement—Personal—Meters Found to Average Slow—Something from Boston, Mass.—The Bisbee (Ariz.) Company Takes on New Scope—Mr. Learned's Plan for Hooking up Southington—Contract for the Gas Machinery Company—Mr. Stuerwald will not Make Handkerchiefs—Contract for the Gas Bench Construction Company—Sale of the Huntsville (Mo.) Plant—Betterments at Talladega, Fla.—Producer Plant Growth—Something from Montreal Canada—And Other Items.

The Market for Gas Securities..... 980

[OFFICIAL NOTICE.]

Fifth Annual Meeting, Iowa District Gas Association.

OFFICE OF THE SECRETARY AND TREASURER,
DES MOINES, IA., May 20, 1909.

ANNOUNCEMENT.

The fifth annual meeting of the Iowa District Gas Association will be held in Waterloo, Ia., June 23, 24 and 25, 1909. The following papers will be read:

"Construction and Operation of a Gas Works in a Town of Five Thousand Inhabitants or Less;" by Mr. Thos. Crawford, Clinton, Ia.

"The Gas Meter: Its Construction, Operation, Sources and Causes of Error, and Its Reliability as a Measuring Device;" by Mr. R. H. Lawlor, Waterloo, Ia.

"The Operation of the Modern Carburetted Water Gas Machine;" by Mr. Wm. J. Bertke, Sioux City, Ia.

"Mutual Interests of the Gas Company and the Community;" by Mr. George McLean, Dubuque, Ia.

"Organizing and Pursuing New Business Campaigns;" by Mr. E. H. Martin, Des Moines, Ia.

"High Candle Power Competition;" by Mr. Elmer Crady, Sioux City, Ia.

Three topics will be discussed in addition to the papers:

"Keeping Ice Out of Steel Holder Tanks and Cups."
"Methods of Disposal of Waste Water from a Gas Works."
"Progress of Tar Market During the Year."

Two special features will form a part of the programme:

1. *An Exhibit of Appliances.*—Suitable space has been leased by the Waterloo Gas Company and is offered free to manufacturers. For details, communicate with Mr. R. H. Lawlor, Chairman, Waterloo, Ia.

2. *An Open Session.*—For free discussion, without a stenographer, will be held the evening of June 23d.

G. I. VINCENT, Sec'y and Treas.

[OFFICIAL NOTICE.]

Second Annual Meeting, Canadian Gas Association.

OFFICE OF SECRETARY-TREASURER,
WOODSTOCK, ONT., May 11th, 1909.

The second annual meeting of the Canadian Gas Association will be held in Montreal, Canada, Friday and Saturday, June 18th and 19th, 1909.

Papers of a most interesting and instructive nature are being prepared and the announcement of their titles will be made later.

Arrangements are in the hands of an entertainment committee for the entertainment of delegates, outside of business meetings.

Montreal is Canada's largest city, beautifully situated, and affords great opportunities for entertainment. There are several large, first-class hotels, but reservations should be made early. The business meetings will be held in the Windsor Hotel. Yours very truly,

A. W. MOORE, Secretary-Treasurer.

[NOTICE.]

Wrinkle Department, American Gas Institute.

WRINKLE DEPARTMENT, AMERICAN GAS INSTITUTE,
OFFICE OF EDITOR, GAS OFFICE BUILDING,
DETROIT MICH, March 12th, 1909.

To the Members, American Gas Institute: All members of the American Gas Institute are earnestly requested to forward contributions for the Wrinkle Department as soon as possible.

Your co-operation determines the success of the Department.

F. L. CROSS, Editor.

OUR HALF-CENTURY SPECIAL NUMBER.

Next month we complete our Fiftieth Year. To commemorate it fittingly the proprietors have determined to print a special issue, on the pages of which will be given a fair history, and at some length, of the progress made in the gas industry since the JOURNAL first appeared to champion the cause. The issue is to have 100 pages, with special cover, the size of the pages to be even with those in the regular edition. One-half the issue (50 pages) will be given to the publication of articles (14 in number) on the leading phases of gas manufacture and distribution, the sketching of the articles to be historical. These articles are in course of preparation by men whose eminence in the profession cannot be gainsaid, and each of them is addressing himself to a subject regarding which he undoubtedly possesses expert knowledge. The remainder of the issue will be given over to advertising, the rates for which are as follows:

LIBRARY OF CONGRESS
JUN 1 1909

One page $50.
One-half page $25.
One-quarter page $13.

The cover pages, inside and out, have been engaged (these were let at figures approximately 200 per cent. higher than the "inside") and 45 of the interior pages have also been contracted for. The edition will go free to everyone of our regular subscribers and advertisers, and extra copies will be furnished at the rate of 50 cents each. No concession in price will be made for orders for extra copies to anyone. Those who desire to advertise, and those who wish to secure extra copies, should address the publishers at once. No undue claim to excellence is made when it is stated that this special issue will contain more in value to the fraternity than was contained in any other issue of any gas news periodical ever printed.

BRIEFLY TOLD.

THE STREET LIGHTING SITUATION, BOSTON, MASS.—Among the numerous activities of the revised departments in Boston during the past year the subject of public lighting has been well featured. The contract for about one-half of the supply, which is furnished by the Edison Electric Illuminating Company, expired last February and a new contract covering this portion has recently been executed without a public letting. Although the terms show a reasonable reduction in price of electric arc lamps, the action of the city officials has been severely criticized. The Superintendent of Streets, Mr. Guy C. Emerson, presented to the Mayor, under date of April 29th, a somewhat lengthly defence, which the Electric Company has had reprinted in a number of the Boston papers as an advertisement. The contract for public gas lamps will not be awarded until next fall; but, at the request of the city, the Boston Consolidated Gas Company installed several types of gas lamps for trial. In order to pacify the clamors of the "peepul," the Superintendent of Streets has taken it upon himself to criticize, not these lamps alone, but gas lighting in general, basing his statements upon questionable, hearsay evidence. He states: "I am told that the matter (pressure gas lamps) was investigated by a number of experts who visited Germany in the interest of the city of New York, and who reported the system to be impracticable." It will be interesting to many of us to know who these experts were, and, furthermore, the interest will be well-accentuated if we could ascertain the result of investigations in that city respecting magnetite lamps, which Boston is to use under the new contract. A number of figures are given which are supposed to represent the relative candle power for $1 of gas current versus electric current, which would do credit to the most scintillant advocate of Cimmerian darkness-defying reflectors. A still further "reason" given for accepting the type of electric lamp submitted is quite as ingenious as that of the fondly remembered photometrist who explained the candle value of a 2,000-candle power open arc by stating that, "If placed at a street intersection the arc would give 500-candle power up each street, it was, therefore, of 2,000-candle power value." Superintendent Emerson states, while it is not denied that the magnetite arc lamps vary in candle power in a particular direction, they do not vary as a whole, the variation being due to the shifting of the lamp from one side to the other, with a consequent concomitant change in the direction of the illumination. If you do not find the 1,500-candle power claimed in the direction in which you desire to travel, why it surely is not your fault. Wait until the arc shifts, then step lively before the next shift happens.

FIFTH ANNUAL CONVENTION, SOUTHWESTERN ELECTRICAL AND GAS ASSOCIATION.—Our advices respecting this meeting, to hand at noon Friday, are too late, of course, to permit of any extended mention. However, the meeting can be written down as having been a complete success. A banner attendance, excellent weather conditions and a true spirit of fraternality marked the entire three days (to say nothing of the nights) of the convention. The "Sons of Jove" could tell us much, but their voices are mute in that their lips are still. Here, for instance, was the excellent entertainment programme:

1st day: Morning, automobile ride for visiting ladies; 6 P.M., luncheon at Lake Cliff (the meeting was held in Dallas, Tex.), for visitors, members and their ladies; evening, theater party, at Lake Cliff Casino.

2d day: 1 P.M., luncheon for the ladies, spread at the Country Club; 9 to 12 P.M., entertainment for ladies in banquet hall, Southland Hotel; 9 to 12 P.M., entertainment for gentlemen, by the Sons of Jove.

3d day: Afternoon, visit to public utility plants and points of interest in and about the city. The officers elected were: President, W. B. Head; First Vice-President, W. B. Tuttle; Second Vice-President, J. E. Carroll; Third Vice-President, C. H. Dunbar; Treasurer, A. E. Judge; Secretary, E. T. Moore. A feature of their welcome to Dallas was a grand arch magnificently illuminated by means of *gas* and electric currents. In fact, so handsome was the effect that the city is contemplating making the arch a feature of the city's night advertising. President Stichter's administration of affairs was well worthy of his reputation as a director of public meetings. Of course, the Secretary's desk was well taken care of by Mr. Moore and his capable aide, Mr. D. G. Fisher.

DEATH OF MR. HENRY H. ROGERS.—Even though this happening had been, partially at least, discounted for some months, nevertheless the report of the death of Mr. Henry H. Rogers, one of the chief executive officers of the Standard Oil Company, which occurred in his Brooklyn home the morning of May 19th, came somewhat in the nature of a shock. However, no matter how aggressive one is personally, death pays small heed thereto. Mr. Rogers suffered an apoplectic stroke in July, 1907, and at that time none close to him thought he could survive the attack. His death was an easy translation. Born in Fairhaven, Mass., which adjoins the old whaling port of New Bedford, possibly 70 years ago, the life of Henry H. Rogers held more of change than is the lot of one out of many thousands. Born of obscure parentage, with probably his first start in life as a carrier for a New Bedford newspaper, he attained an eminence in the heights of the world's business that probably never was exceeded by any; and as for the wondrous diversity of that business career, there really is no limit to it. It is neither our purpose nor our province to give here other than the merest passing mention, for the daily and weekly press of the country have told the wonderful story in hundreds of ways. Hardly any branch of finance or commercialism may be mentioned but that one could readily find account of his connection therewith. However, his connection with the gas industry was, as like all things with him were, pronounced and important. Of course, his connection with the gas industry had to do with its commercial rather than engineering end, and it may be said to have begun in the early 80's, was intimately related to the cycle of operations which resulted in the present combination of gas interests in Boston, Mass., and in the district of Greater New York, now known as the Borough of Brooklyn. There he was largely responsible for the combination which resulted in the formation of the Brooklyn Union Gas Company, and his great interests in this huge corporation were retained by him to the end. In fact, he was only recently re-elected to the position of Vice-President thereof, a position held by him for many years. Of course, he had other interests in the gas business, but that last mentioned was the one which attracted him most uuless the name Bay State gas is written.

CURRENT MENTION.—

THE proprietors of the Denver (Col.) Gas and Electric Company have found out a way to cause the Barrett Manufacturing Company and its dependences some displeasure—in fact, we would not be surprised if it caused them just a bit of uneasiness—in that they have made of their tar working up plant in Denver a success. In fact, so successful have they been in this respect that the modest outfit with which the distillery was started, perhaps 6 years ago, is to be doubled in size. This doubling, it should be remembered, will really be a quadrupling, in that the plant of 1902 was doubled in 1906 or so. The principal products are tarred felt, pitch and dip. In connection with this tar plant and its promotions, due credit—which will mount up to quite a percentage—should be given for its equipment and operation to Mr. A. E. Reynolds, who has been the practical, working genius in its development since its inception.

"T. R." is informed that Mr. Charles D. Lippincott was elected Vice-President of the Swedesboro (N. J.) Gas Light Company, vice Mr. Wm. H. McCullough, deceased.

MR. P. K. ADAMS, who has been Superintendent of the Washington (N. J.) Gas Company since the plant of the latter was started up, will return to Hammonton, N. J., this week. His successor is Mr. Newman McClary.

"J. A. B.," sends this from Astoria, Ore., under date of the 20th inst.: "I have looked in vain for some mention in the JOURNAL of the death of Mr. Gilford O. Moen, who was prominent in private and public life here for many years. His death occurred the afternoon of the 6th inst., in his apartments in the Northern Hotel. Deceased was a native of Norway, having been born in the Norwegian capital, October 9, 1839. He was an engineer by profession, and was identified with the Petaluma (Cal.) Gas Company for several years. First as Superintendent and later on as owner. He came to Astoria in 1883, and here built the Astoria gas works which he managed with success until he disposed of his interest therein to the Astoria Electric Company. Mr. Moen was a member of our Board of Police Commissioners for 6 years—he declined re-election at the end of his second term. He was prominent in Masonic circles, and was greatly liked by his intimates and respected by his fellow-citizens."

THE North Shore Consolidated Gas Company, of Waukegan, Ills., has decided to again operate its gas benches—water gas was made there exclusively for the past two years—and has ordered the Gas Bench Construction Company, of St. Louis, to put all the benches in first-class condition. The contract calls for the installing of the Bench Company's modern settings.

Gas Plant Shop Notes.

[Prepared for the JOURNAL, by "ENGINEER."]

While going through a gas plant the other day I saw a number of tar extractors for coal gas in operation under detrimental circumstances, and an examination showed that some of the extractors tilted over to one side, as represented in Fig. 1. A further investigation proved that the tipping condition was due to a sinking of the foundations of some of the extractors, as at *A*. In one case a wire rope was stretched from a wall post to the stack of the extractor with a view of assisting in holding the extractor upright. This wire cable is marked *B* in the illustration. I looked over the pipes, joints and mechanism of the extractors thus thrown out of line, and readily observed the disastrous effect of the strain. Some of the pipe joints were expanded and twisted to the point of opening. Nearly all leaked a little. It seems that an inferior description of concrete floor had been made, regardless of the needs of a firm foundation for this line of gas working apparatus. The foundation was warped, cracked, depressed or otherwise imperfect. The entire foundation had to be cut out, which required some days of chipping. Then a foundation was created for each extractor with a separate iron plate, as in Fig. 2. The earth was excavated 4 feet deep and hardwood posts put in. Then properly mixed concrete was tamped in between the posts, making a solid foundation. On top of the posts rested a 10-inch slab of cast concrete and the iron plate for the extractor rested on this.

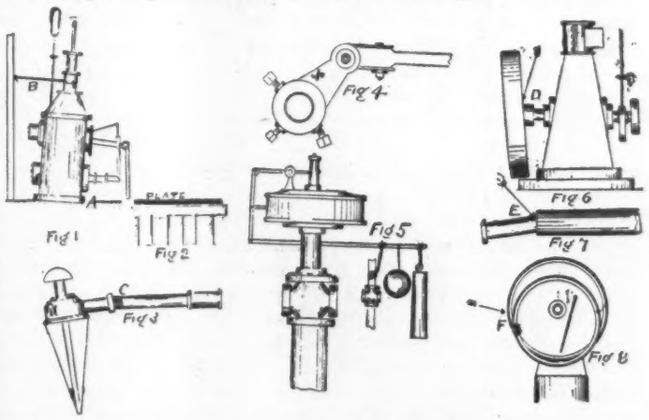
Pipe end reamers are important in all gas works shops. With a few turns with the modern types of end reamers, a full pipe area can be made, even when the pipe end has been subjected to considerable abuse, through which it was twisted, jammed and bent. Yet the useful pipe end reamer is often handicapped in its usefulness by careless men. I am moved to refer to this instance because I saw a first class pipe end reamer thrown aside by a green hand because he had strained the reamer by using it in a reckless manner. He was working at some heavy pipes that looked like old boiler tubes. A bracket held a pair of the pipes together and the man attempted to pry the pipes apart by using the steel blades and the handle for a lever. He bent the handle, as at *C*, Fig. 3. This threw the three steel blades out of a triangular position, so that when the man attempted to open some piping the appliance could not work as originally. The man threw the device aside. We obtained a new handle for the reamer and restored it to its former order.

In a certain plant where they were using a gas exhauster manufactured by a reputable gas exhauster and blower company, the engine was thumping and groaning at an alarming rate. I could see at once that something was wrong, as I knew the builders and was aware that they never sent out apparatus in this uncertain condition. The trouble proved to be due to a defective crank-arm. The original crank was broken by the workmen failing to properly grip the machine in the hoist from the flat car. The machine fell in such way that the crank was broken off. The improvised crank is shown in Fig. 4. Instead of fitting like the first crank, this crank was a little too gross in size of the hub. The three set-screws were installed. One was bent. The points had gouged grooves in the shaft. Consequently at every revolution of the engine the crank developed a slight motion on the shaft. This was fixed by cutting two key-seats and driving steel keys securely into the hub and shaft.

Your correspondent next observed a very good gas pressure governor in service in a plant where the superintendent evidently failed to carefully inspect as often as he should. Almost the first thing I observed was a struggling gas pressure governor laden with several articles on its lever, as shown in Fig. 5. I asked what had become of the original weight, which is usually a neatly fitting square piece of metal, adjustable with a set-screw, and can be operated advantageously. It was the old story. The original piece had been lost and a weight from a window sash hung on, as in Fig. 5. Not being enough, a ball was added and then a piece of pipe joint. When you see patchwork like this you can look for imperfect service on the part of the best of governors. Although there were no complicated mechanical parts in this particular governor, the device labored faithfully along under several disorders due to neglect. Parts were bent; dust had collected at various points; bolt heads were loose; yet the device worked.

Another illustration of a struggling machine is exhibited in Fig. 6. In this case a high pressure gas pump was in use with a 4-valve engine. The engine appeared to tremble at each turn of the balance wheel. I noticed that the wheel did not run true. I examined the foundation of the engine, but this was all right. The cut shows in enlarged form the condition of the balance wheel. The shaft was sprung at *D*. Fig. 7 shows the condition of the shaft at *E*, when the shaft was removed to straighten. It was found that the shaft had become sprung by a workman allowing an iron ladder to fall into the running engine. The man was using the metal frame ladder for oiling the shafting. This bent shaft was never fixed. A new shaft had to be turned.

Then I saw a reputable make of recording gauge handicapped in its work by being in the condition shown in Fig. 8. The valve was



made for all ranges of pressure and vacuum, yet was restricted in this case by the broken door binding the mechanism. The hinge at *F* was removed and in a very little time the repair man of the place had refitted a home-made attachment so that the door could be properly closed and fastened.

[PROCEEDINGS, AS FURNISHED BY THE SECRETARY.—Continued from page 928.]

PROCEEDINGS, THIRTY-NINTH ANNUAL MEETING, NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

HELD IN YOUNG'S HOTEL, BOSTON, MASS., FEB. 17, 18, 1909.

FIRST DAY—AFTERNOON SESSION.

Discussing the Macbeth paper, on "Why the Gas Man Should be an Illuminating Engineer."[1]

Mr. Owens—Mr. Macbeth compares the inverted gas lamp with the 60-watt tungsten lamp. I think that is a mistake. If he had made it 75 it would be a little better; in fact, he might make it 100. I don't think there is much question about the value of gas men being illuminating engineers, but whether they are illuminating engineers or not they at least ought to be gas lighting engineers, and there are more of them every day. Mr. Macbeth speaks at length about horizontal values, but I think that has been taken up altogether too much. The vertical distribution, especially in store lighting, is quite as valuable. One of the best features of illuminating engineering, as far as the gas business is concerned, is its advertising value. I believe they should advertise the appliances they have in every way possible. One of the best assets the electrical interests have is the popular impression regarding the tungsten lamp, and electric manufacturing companies maintain an electrical publicity association—quite a large organization for the purpose indicated.

Mr. Ware—Mr. Owen's point, that we should not confine ourselves to the comparison with the 60-watt lamp is well taken, for I think the average, good quality, inverted burner will beat out any 100-watt tungsten lamp that can be put on the market. There again, though, we should be careful that we don't fall into the mistake of talking only candle power and comparative cost. We can beat out any electric light there is on every line, and the most important point of all is the quality. The quality of gas light is really our strongest card, and we should talk that before we talk price or actual candle power. I am very glad indeed to hear Mr. Macbeth's prediction over the mantle that will fully hold up in candle power, and if he can show us that, while holding up the candle power, the color remains unchanged, we will be in a very strong position indeed. One point which needs more attention than anything else is the heat. The gas burner is weak in that direction, and if there is any possibility of working in comparatively simple ventilation schemes, it is worth a great deal of work to determine and to find such schemes. The time will come, I think, when installations of gas lamps should, wherever possible, include specifications for ventilation.

1. For the text of the paper see *ante*, p. 923.

The Vice-President—Will Mr. Burr give us something on this subject?

Mr. Burr—I don't believe, Mr. Chairman, I can say anything that will add to the interest or the information, at this time, except that I am very much interested in this particular paper.

The Secretary—Mr. Chairman, I think there is one thing that we sometimes say, and is perhaps not so convincing as we wish it was. Comparing a so-called 70-candle power inverted gas lamp with prismatic reflector against a 100-watt tungsten lamp similarly equipped, we believe that the available light is much greater from the gas lamp. I think it is a fact that the ordinary observer looking at it would say that the tungsten lamp was ahead, due to the brightness that he sees and to the fact that he does not look on the table, on the counter, on his book, to see what light he is getting where it is needed. I think frequently we can convince people of that fact by just asking them to try it and see; instead of looking at the light to look at their newspaper or at their goods on the counter. I presume this is due to the fact that the horizontal light from the tungsten lamp, striking the glassware, makes it very much lighter than the light from the mantle, a large portion of which is thrown downward anyway. If it were not so late I would like to say something in regard to the reference made in the paper about maintenance. I wish to call your attention to the fact that upon the programme there is a question in regard to maintenance, and to ask you to all come to-morrow with all your information with regard to the maintenance question.

The Vice-President—What has Mr. Macbeth to say about the color values of the two lights.

Mr. Macbeth—In the matter of color values there is not any question that the mantle is very much ahead of the tungsten lamp. I assume it is a tungsten lamp comparison, because pretty nearly everything to-day in electricity for illumination is tungsten lamps, when it comes to comparisons. There are other conditions as well as the color of the light. The question of intrinsic brilliancy is a point which has been brought up. When we look at a tungsten lamp and look at an inverted burner it is not so much the question of total flux of light as that of intrinsic brilliancy. This point should be brought to the customer's attention; show him how much more subdued and softened that inverted mantle looks than the filament of the tungsten lamp, and then how much more illumination we get down here on the plane, and how much more comfortable it is—the glare is missing. I have here the January "Transactions" of the Illuminating Engineering Society, in which there is a paper by Dr. C. T. Steinmetz, who is one of the experts for the General Electric Company, a man who has gone very deeply into a great many of these questions and an authority who is not questioned in any way. He brought out one or two points that I want to quote, because they bear right on this question. On the question of physiological effect of illumination from sources of high brilliancy being in the line of vision, he says that "The light sources should be located where one is not liable to look at them—*i. e.*, at or near the ceilings. One possible plan is to use light sources of moderate intrinsic brilliancy, such as the Moore tube, the mercury lamp, the Welsbach mantle. With illuminants of high brilliancy, such as the electric arc, the incandescent lamp, especially the tungsten, etc., the brilliancy of the illuminants may be reduced by inclosing it with a diffusing or diffracting globe or shade, such as an oval, frosted or prismatic globe, etc. The question with tungsten lamps, of using enamelled shades and balls and opal globes, is not as much a question of modifying the distribution as it is a question of cutting down the intrinsic brilliancy to a point where we can bear to have this source of high intrinsic brilliancy in the room with us. Further on, under the heading of "Eye Fatigue," he says: "Of considerable importance regarding fatigue of the eye is the color of the light; fatigue at high intensities occurs far more with yellow and orange rays than with white light, and very little with green and bluish-green light." So that if we get a light just as close to a white light as we can get it there must be green in it, and there are not any of these electric incandescents which are not deficient in green. Take a light of the texture of the tungsten, compare that with a mantle where we have sufficient green and thereby get closer to a white light. We have a light that is easier on the eyes, causes less fatigue, and that is a final test of good illumination. On the point brought up by Mr. Owens, I did not compare 60-watt tungsten lamps with inverted burners in so far as total flux was concerned. In the sale of illumination we have just as much a physiological condition to deal with as we have in the comparison of the various illuminants. You have to consider what a man wants, what he has his mind fixed on. I did not suggest the 4-light fixture with 60-watt lamps in this store. This customer has other stores and had used these fixtures before. It was his idea that this particular arrangement would be satisfactory with three of these tungsten fixtures. I told him at the time how much more illumination we could give him with three 4-light fixtures equipped with inverted burners. The statements I made were simply to show that when you went into figures on maintenance cost there was nothing to it. It was a case of showdown, that was all. On the matter of horizontal and vertical illumination values, the vertical illumination values are helpful to us, of course. We have to look after our store shelving and also to our values on the ceiling; but if our values are not fairly uniform on the horizontal plane on the floor, or on the counter-plane, if we run anywhere from a difference of 80 or 90 per cent. between maximum and minimum, and get that minimum down below 1 foot candle, we have illumination that looks bad. If you keep your minimum up, however, to a foot candle, you can run up several times that amount with your maximum and still have illumination which the higher your maximum goes merely seems to add to the general brilliancy of the illumination. I had no intention of drawing a comparison between the gas and electric, so far as the actual efficiencies of the different lamps themselves are concerned. The question of good quality is a very important one, as is also the question of color values. I might add that I am not in a position to say very much regarding that mantle question. The question has been raised about the color being unchanged throughout its life. When you take up an investigation, or begin to go over reports where the tests are of 4,000 and 8,000 hours' burning, it is not like 40,000 bumps on a mantle which you can run through in 1 or 1½ seconds apiece; when you have 4,000 hours it represents 6 months. I don't think there will be any question about the mantle standing up in color even better than it does in its candle power efficiency. Regarding the question of heat from a gas burner. As we increase the efficiency of our burners we pull down the consumption of gas, consequently reducing the amount of heat generated. The matter of ventilation I have not gone into very fully; that is, not sufficient to disagree with Mr. Ware entirely on his specifications; but I believe if a room is of a character that you would require a special ventilation system for it, if you were using electric light, that many times with a similarly arranged room having a good system of gas illumination, all you would need would be proper provision of entrance and exit of a sufficient volume of air, the heat from the gas would be sufficient to insure a proper circulation of that air and the resultant ventilation would be all that could be desired. In the room shown on Fig. 18 they secure excellent ventilation. That room is frequently crowded with customers, and they now have a system of ventilation of a character which was not possible before when electricity was used for lighting. Of course, half of that ceiling is skylight, and there is a stairway at one end open to the lower floor, and also the lower windows, for the admission of air. There is, therefore, no difficulty in getting air into and through the room and passing up through the skylight. With electricity they could not obtain that ventilation. I mean so far as using electricity only for incandescent lamps without the addition of fans. I believe I have covered all the points raised.

The President—If there is nothing further we will close the discussion.

The Secretary—I would like to move a vote of thanks to Mr. Macbeth for this paper. It has been quite a work to get it up. There are some points in it that we shall like to refer to later on. [Seconded and adopted.]

The President—The Secretary has a few announcements to make, and then we will adjourn.

The Secretary—I would like to thank you, gentlemen, for your patience under our delays. It is not often that you have to wait for us to begin the meetings; it is more often that we have to wait for you. If you will kindly bear that in mind to-morrow morning at 10 o'clock, and all be here promptly in your places, we will try and get through the programme before dark to-morrow night, otherwise I don't know.

Adjourned till Thursday, February 18, 1909, at 10 A.M.

Second Day—Morning Session.

The Association reassembled at 10:15 A.M., and the President said—Gentlemen, if you will please come to order, we will look into the Question Box while the members are gathering. One question here is:

"What success has attended the 'Self-Figuring Systems' of billing for gas?"

I think Mr. Nute has had some experience on this question.

Mr. Nute—We have been working with such a system for some months. The reading of the meters has been done throughout the city for several months, and we are just fairly getting into operation the office end of it also, although that is not fully in operation yet. It looks very promising; that is about as much, I think, as we are prepared now to say.

The President—Won't you, for the benefit of the members, describe the system? It is a new thing to a number of them.

Mr. Nute—It is a rather long proposition, take it all the way through. In general, it is a system by which all a meter reader has to do is to punch out the figures corresponding to the meter reading on a card, the punch mark at the same time making a bill in triplicate. Two sections of the bill are left with the customer at the time. One of the great advantages of the system is the fact that the customer gets the bill at the time the meter is read. The meter reader collects the bill if the customer is ready to pay it. If the customer does not pay it, the third section of the bill is brought back to the office for the office work; if he does pay, one part is receipted and left with him, and both the other sections are brought back. That part of it seems to be quite simple. It works very nicely. It is somewhat slower, of course, in the meter reading than the other system, but still is very satisfactory. The office end of it I will not attempt to describe, as a great many details are still being worked out on it. They all seem to be coming along very nicely. The system is not in operation, I believe, in this sort of work anywhere, but has been introduced to a considerable extent for factory cost keeping and work of that kind. It looks very promising. Its working in the office is practically a card ledger system. That sort of thing we have been opposed to in the past, for a number of reasons; but this seems to have overcome our principal objections to the card ledger system, and we are very hopeful that it is going to develop so as to save us both time and money and be more satisfactory to our customers.

The President—Is there anything further? This question leads to the question of continuous meter reading. Some companies have adopted this system in order to distribute the work to better advantage. I think Mr. Morrison can tell us something from his experience.

Mr. Morrison—Continuous meter reading, I suppose, is used more or less by larger companies, and we might contrast the two systems for a moment. Under the old system of reading all the meters were read in as short a period and as near the end of the month as possible. The distribution force is taken off of distribution work and put on to meter reading. This upsets the routine of the distribution office very much. Out of your force you probably take from ⅓ to ¾ of your men off distribution work and put them on to meter reading for 3 or 4 days, which necessarily throws the distribution work behind and also throws into the office work a large number of readings in a very few days. That doubles up the office work. Now, in contrast to that, suppose it took 10 men 3 days to read all the meters on the one system, you might say that it took 1 man 30 days to read all the meters on the other system, and the advantage it would have would be that you would have 1 man whose duty it was to do nothing but read meters, and the work would be spread over 30 days instead of over 3 days, both in meter reading and in the office. It seems to me, from experiences I have had, that continuous reading has every advantage. We have it down as fine as we could in a small plant, and where we used to read in 3 days it now takes from the 4th of the month to about the 27th, with the readings coming in continuously, and it likens it somewhat to piecework. You are able to put 1 man on meter reading without any interruption or disturbance to your distribution force. The meter reading and the billing at the office proceed very smoothly and are stretched out over a period of practically the whole month. I think, in order to make this ideal, we should go still further and bill continuously; in other words, if we read a series of meters on the 5th of the month we should bill those meters as soon as they are put on the books. That is what Mr. Nute is accomplishing by his mechanical system. The bill is delivered as soon as the meter is read, and not held for 20 or 25 days before it is delivered. I firmly believe that continuous reading is the proper thing.

The President—We will now take up the paper by Mr. Edwin Garsia, of Boston, unless there is to be something further on this system of meter reading.

Mr. Garsia then read the following paper on

STREET LIGHTING.

As a city progresses its form of street lighting requires careful and thoughtful attention. At one time, when travel at night was infrequent, the form of street lighting used was a collection of widely spaced lamps which acted as beacons to indicate a direction of streets and the location of houses. This system soon becomes inadequate for the increasing needs of the growing city and beacon lighting gives way to street illumination. Nothing is more important for the safety of persons and property at night than proper and sufficient street illumination. The day of the tallow dip and the yellow oil flame is passed, and we have two principal systems employed in street lighting—the gas and the electric.

Electric arcs of different types, the open and inclosed carbon lamps and the magnetite arc, are to be found in almost every city in this country. In some of the cities abroad flaming arcs are used to some extent, but, owing to their high cost, are not highly favored. Electric incandescent filament lamps, in small units, are also used to some extent in street lighting. At present the carbon filament type is employed, but experiments are continually being made with filaments of different metal, namely, tungsten, tantalum and osmium. These newer types are, as stated, still in the experimental stage, and have not as yet demonstrated their practicability for street lighting.

The most generally used gas street lighting unit is that employing the incandescent mantle, giving actually 60 and more candle power. Abroad, high pressure gas systems have proved satisfactory for intensive lighting on principal thoroughfares, while the low pressure gas lamps are extensively used on boulevards and residence streets.

The problem of properly lighting the streets, boulevards, parks and byways of a large city is one which should and does receive careful attention. To solve this problem it is necessary to consider the proper units for the different sections to be lighted. In closely built up and congested business streets it has been found that a high candle power unit was the most desirable, and for this purpose the electric arc is the accepted type. The high candle power of the arc lamps, aided by the reflection from the tall buildings on the sides of the street, allows them to be placed at a considerable distance apart and high above the street, thus not interfering with traffic, as might be the case where a larger number of posts would have to be installed for a smaller unit gas or electric system.

Berlin and London use high pressure incandescent gas lamps on posts high above the street, and, where the traffic is greatest, as in Fleet street, London, the lamps are supported on brackets from buildings on opposite sides of the street. The actual candle power of these lamps is considerably greater than carbon arc lamps and the distribution of light in the vertical and horizontal planes is far better than that produced by flaming arc lamps.

High candle power units are not desirable in residential districts. Here a multiple of smaller units, giving a uniform distribution of light of more moderate intensity, without glare, produces the best effect This is where the gas unit is more preferable than the electric. The light of the arc is too intense, while that of the incandescent filament lamp is not great enough to give the illumination required. Another feature to be considered in the lighting of residential streets is that the unit should be of attractive design and always in keeping with the surroundings. As yet the fixtures for the electric incandescent lamps have not been made attractive and are not considered nearly so desirable as those of the incandescent gas type. By employing a unit of light of 60-candle power, elevated 9 or 10 feet above the sidewalk, and spacing them properly apart, the illumination produced on the surface of the street and walk is uniform and sufficient for safe travel and without fatiguing the eyes. On wide boulevards, where there are no overhanging trees, electric arc lamps of the inclosed type, with suitable globes for diffusing the light, prove satisfactory and are in considerable use. In other cases, where the roadways are lined with trees, incandescent gas lamps give the best service, as the light is thrown on the roadway beneath the branches of the trees, thereby producing better street and walk illumination than would be obtained with higher arcs with tree branches between them and the ground. At times the electric incandescent filament lamp is used to meet these conditions, but the possibility of overhead wires grounding on the trees, thereby destroying them, is a discouraging feature.

Another system of lighting which is used to a large extent is the incandescent mantle gasoline lamp. These lamps are chiefly used where good illumination is necessary and where it would be impracticable to extend gas mains or where they do not exist. By this system many parkways and walks are efficiently lighted, as well as side streets without gas mains, and alleys in the rear of residences.

The average street illumination of American cities is considerably lower than what has been deemed necessary for proper lighting by European cities. This is due to the fewer number of units used per

mile of street; especially true of the gas units. Sixty-candle power gas lamps in Europe average not more than 100 feet apart, whereas in this country, with the exception of a few instances, lamps of this type are much farther spaced, sometimes up to 200 and 300 feet apart. For the purposes mentioned the incandescent gas street lamp has been firmly established, and when it is properly maintained it is attractive, unquestionably efficient and the champion of gas in the field of street lighting. I might add in conclusion the field is so very broad that all that I have been able to do in this short paper is to touch on the high places, as it were.

The President—This is a very interesting paper, and a subject that we ought to be more interested in than we have been. It is now open for discussion.

Discussion.

Mr. Owens—Mr. Garsia brought out many of the advantages of gas, but I am afraid if I were to tell you all the good things I know about it, my speech would be about twice as lengthy as his paper. Mr. Garsia mentioned that overhead wires were rather a disadvantage in incandescent electric lighting, but another distinct advantage on the side of gas is the lamp can be placed on both sides of the street. He speaks of the tungsten lamp. While I won't say that they have as yet demonstrated their practicability for street lighting, they are coming into use very rapidly. That they are being very well advertised, is so, and that is not true of the gas lamp to-day. Gas men seem very backward about advertising the value of a gas street lamp. One thing the tungsten lamp has demonstrated is the value of reflectors. The mantle gas lamp in use to-day for street lighting was perfected about 10 years ago, and to all intents and purposes it has not been changed since. Mr. Garsia speaks of 60-candle power, which does not mean very much to me, for lighting value depends a great deal on the distribution. I don't think the average lamp is well suited to the purpose, especially when it is placed only 8 or 9 feet instead of 14 or 15 feet high. But we have posts which are 8 or 9 feet high, and we will have to use them to the best advantage. One of the solutions of the street lighting problem is to use an inverted lamp, but the desired results will not be achieved by simply hanging it upon a post, as the reflectors should be changed to suit the conditions.

The President—Anything further?

Mr. Klumpp—In comparing gas lighting with electric lighting, I think the gas people to-day must be more energetic if they want to compete with tungsten lighting. The series tungsten lamp with short filament, operating under a very small voltage per lamp, and giving the 60 candles, placed at short distances through residential districts, is going to be a strong competitor of incandescent gas lighting. With current at 5 cents a kilowatt-hour, these lamps can be placed at a $15, possibly a $5, renewal charge, which makes $20 per year for a 60-candle power lamp and maintained at 60-candle power the entire year. Unless you adopt the very best type of fixtures, and make an artistic display of gas lighting, you must look out in the future for great inroads on your gas lighting by the electric lighting interests. These tungsten lamps can be put right in series with the arc lighting systems and be placed at a very nominal charge to the electric company. It is not only the electric arc lamps that we have to meet in the street lighting proposition.

Mr. Owens—If I may make another remark, Mr. Klumpp spoke about the tungsten lamp being 60-candle power and maintaining 60-candle power. I don't believe there is an electric lamp works in the country that will make a tungsten lamp that will operate on a minimum of 60-candle power, unless it might be a 100 or 250-watt lamp, certainly not a 75-watt lamp. They deteriorate quite as much as a gas lamp.

Mr. Ware—One thing that may be brought about in the near future is the basing of street lighting contracts on the illumination produced, and the specification that lamps shall be used which shall give some fixed minimum illumination for a definite spacing, or a definite horizontal illumination at such-and-such a distance from the lamp. I think the gas companies have to work along this line so as to be prepared to meet these requirements and to know what tools they are working with. The question of the height of street lamps has not been sufficiently threshed out, in my opinion, and quite a lot of work is still necessary along this line. This is entirely true in the case of the inverted lamp, where, as far as I can see, the only limit of height is the limit at which the lamps can be handled practicably. The illumination at the distant points, above 30 feet from the lamp, increases at a very marked rate as the height is increased, and the practical limit of handling is far below the limit at which the lamp gives its best results. In the case of the upright lamp I think most lamps give over the 60-candle power which they are figured for, but unfortunately most of this light goes to waste above the horizontal, and in the boulevard type of lantern there is no attempt made to reflect this light down where it will be useful. I believe the street lighting companies make quite a point of the opal dome, and object very much to putting in any reflector which shall cut the light away from that. This I think is a mistake. In Toronto they have, for their upright street lamps, mirror reflectors, which are arches of mirrored glass segments pointing upwards and outwards above the mantle, which give a very marked increase of illumination along the street. This is somewhat a makeshift contrivance, but it is very much better than the bare mantle, and where the boulevard type of lantern is to be continued I think that it conld be very much improved by adapting suitable reflectors. This, of course, is more particularly necessary where the lamp is hung only 8 or 9 feet above the street.

The President—Mr. Burritt, we would like to hear from you on this subject.

Mr. Burritt—Mr. President, what I have to say in regard to this matter perhaps is not directly in line with the paper or with the discussion. I think gas men will all agree on the point regarding street lighting, that one of the principal drawbacks is the maintenance of the lights and the lighting and extinguishing. The clock system is good if it works all right, but clocks will refuse to go, as the frost bothers them in the winter and insects interrupt the working of the mechanism in the summer, so that they are oftentimes out of order, giving unsatisfactory results from the standpoint of operation. We have been experimenting with the distance lighters. I presume most of those in this room know about this German device. We have a few hundred street lights in Springfield, most of them quite a distance from the works, some being 3 or 4 miles away. We have been experimenting with a few of these distance lighters to see what results we could obtain. There are three kinds, called the "Single," "Evening" and "Night" lighters. An impulse given to the pressure in the street mains will ignite the "Single" lighters and the next impulse will extinguish them. These lighters cannot be used in the same system with the 3-wave lights. The so-called "Evening" lighters are ignited by the first pressure wave, extinguished by the second wave, and remain extinguished by the third wave. The "Night" lighters are ignited by the first pressure wave, remain burning by the second wave and are extinguished by the third wave. This mechanism has its faults, but where they are installed especially quite a distance from the works, where there is absolutely no trouble with moisture in the gas, they give fairly uniform satisfaction. We have only been through the experimental stage with these lights, but are expecting soon to install 120 of the 3-wave lighters at Longmeadow, and have faith enough in them to believe they will not only save the company a good deal of money in the maintenance, but will give a service that will be entirely satisfactory to the public.

The President—Mr. Burritt's experience is certainly very interesting. Anything further on this subject?

Mr. Klumpp—I would like to ask the last speaker if he could tell me how great an excess pressure he had to put on at the works to work the lamps at a distance, and whether the other variations of pressure during the day, caused by the peak load, etc., affected his lamps?

Mr. Burritt—That matter we had to work out by experience. We found the automatic working of the governors affected the lights when they were first installed; but we give them a range of about 2 inches. The governors do not quite reach that range the way they are set at present, and consequently do not affect them. I will state also that we secure this impulse by partial by-passing the governors, and, of course, have to give the impulse a little time to travel to the remote part of the systems and mains.

Mr. Blanchard—Mr. Burritt, after he puts out his 2-wave lights, leaving the 3-wave lights on, would, I should think as his next impulse, light the 2-wave lights instead of extinguishing the 3-wave lights.

Mr. Burritt—I had to consult for a moment with our chemist, who has experimented with these in the laboratory. I think I am right in stating that the 2-wave lights carry over for a third wave, so that they are ready for the next cycle at the beginning the next evening.

The President—I should think that could be arranged by having a blank, so when the third impulse reached the 2-wave lights it would bring up a blank, no opening. Then the light would be turned on the next impulse.

Mr. Blanchard—A by-pass might in that way do it.

Mr. Ware—Has Mr. Burritt any data on how far these impulses will carry effectively, and in case of a large territory whether he would need special stations with blowers for covering certain districts, or whether it could all be carried on from the main works. Secondly, whether there has been any notice on the part of the customers, or whether any complaints have been received on account of this pretty marked increase for the period named; and thirdly, how long the impulse must last to be effective?

Mr. Burritt—In reply to the first question, in any part of the system controlled by the automatic governors these can be operated readily. We give, I think, a period of about 6½ minutes for the wave to traverse to the extreme end of the street lighting system, which is not the furthest part of our mains, perhaps 4 or 4½ miles away. The complaints in regard to the rise of the pressure two or three times a day have been very few. I think one or two consumers have complained on the hill district, where the pressure was naturally high—that is, at least they have noticed it; but, of course, there was nothing that could be construed as being in any way objectionable in this manner of igniting these lights. And, the third question?

Mr. Ware—The third question was the duration of the impulse.

Mr. Burritt—I think I have already answered that; about 6½ minutes is the duration of the impulse.

Mr. Klumpp—A class of high pressure lighting mentioned by the writer of this paper must be seriously considered As President Richards said last night, we must keep before the public, and to do this in street lighting I undoubtedly think we must take up this high pressure lighting. It is being done in Germany and England with apparent marked success. There is no better way that we could advertise the gas street lighting than to put in some few—only a few—instances of high pressure lighting in our cities. Take some public square and place some 2,000 and 3,000-candle power units; it would be the talk of the town. If we want to hold street lighting and get a large proportion of our urban business, I think we will have to take up the high pressure system. It will surely come in 2 or 3 years, and I think we ought to consider it right away.

The President—Is there anything further? The objection raised to the excessive pressure in some of the higher districts might be overcome by an individual governor. If there is nothing more we will close this subject.

The Vice-President called for the

Report of Committee on President's Address,

which was read by Mr. Nettleton as follows:

The Committee on President's Address would respectfully report as follows:

That they have carefully examined the address and find much to commend and nothing to criticize. It touches in a conservative way upon most of the subjects that are attracting attention in the gas world to-day, and with such good judgment that your Committee believe that it would repay every member of the Association to make himself familiar with the address.

Your Committee would especially call attention to the part of the address relating to the commercial side of our business. It is a side that is receiving much attention already, and if the business is to make the success we all hope, it must receive still more attention in the future. Sales per capita, to which the President referred, are a ready means of comparison, and none of us should be content if our sales are below the average of other companies similarly situated.

All of which is respectfully submitted.

C. H. Nettleton,
C. F. Prichard,
F. S. Richardson, } Committee.

The Vice-President—Gentlemen, you have heard the Committee's report. What is your will?

On motion the report was accepted and placed on file.

Report of Nominating Committee.

Mr. Prichard presented the following report from the Nominating Committee:

For President.—W. G. Africa.

For Vice-Presidents.—W. H. Snow and B. J. Allen.

For Directors.—D. D. Barnum, C. A. Learned, Thomas H. Hintze, J. A. Coffin, H. K. Morrison.

For Secretary and Treasurer.—Nathaniel W. Gifford.

Election of Officers.

Mr. Humphreys—I move that the Secretary cast a ballot for the entire ticket as read. [Seconded and adopted.]

The President—Mr. Secretary—You are authorized to cast one ballot for the ticket as read.

The Secretary—Mr. President, there being no objection, I cast the ballot for the list as read. I did not hear it, but I suppose it is all right.

The President—You are voting for yourself.

The Secretary—It must be all right, then.

[The nominees of the Committee were declared to be elected as the officers of the Association for the ensuing year.]

The President—Gentlemen, I thank you for this renewed evidence of your confidence, and I ask again for your support for the next year. Yesterday we had the question, "What can fireless cookers do for the gas range?" We have a very full answer here from the New London (Conn.) Gas and Electric Company, with some statistics. I will not read all these figures, but we will place them on file, so that they will be printed with the record.

THE ADAPTATION OF A FIRELESS COOKER TO A GAS RANGE.

The following tests were made to show the adaptability of a fireless cooker to a gas range:

The cooker was constructed by placing one wood box inside another, the space between the inside and outside boxes, an average of about 2 inches, being packed with loose asbestos. The box has a false bottom made from an asbestos board with a hole cut in it large enough to fit a star-shaped gas burner. A cover, packed with asbestos, was made to fit over the top of the outfit.

A tin pail, holding 15 quarts of water, was used for the tests. The star burner was regulated for a flow of 15 cubic feet of gas per hour. The tests were made under three different sets of conditions:

First; the water was heated on top of the range, exposed to the air.

Second; a hole was cut in the bottom of the oven large enough to admit the star burner, and the water was heated over this burner in the closed oven.

Third; the water was heated in the fireless cooker over the burner.

Two tests were also made with the cooling of the water; one when in the cooker and one when on top of the gas range.

Test on Top of Range.—Amount of gas consumed, 15 cubic feet per hour, temperature of cold water, 56°

Time in Minutes.	Temperature. Deg. F.	Cubic Feet Gas Used.	Cost at $1.35 Per 1,000.
5	80	1.25	$0.00168
10	100	2.50	0.00337
15	114	3.75	0.00506
20	132	5.00	0.00675
25	148	6.25	0.00843
30	168	7.25	0.00978
35	174	8.75	0.0118125
40	186	10.00	0.01350
45	196	11.25	0.01518
50	204	12.50	0.01687
55	212	13.75	0.01856

Test of Oven.—Amount of gas consumed, 15 cubic feet per hour, temperature of cold water, 56°.

Time in Minutes.	Temperature. Deg. F.	Cubic Feet Gas Used.	Cost at $1.35 Per 1,000.
5	80	1.25	$0.00168
10	100	2.50	0.00337
15	114	3.75	0.00506
20	132	5.00	0.00675
25	148	6.25	0.00843
30	168	7.25	0.00978
35	174	8.75	0.0118125
40	186	10.00	0.01350

Test of Fireless Cooker.—Amount of gas consumed, 15 cubic feet per hour; temperature of cold water, 56°.

Time in Minutes.	Temperature. Deg. F.	Cubic Feet Gas Used.	Cost at $1.35 Per 1,000.
5	78	1.25	$0.00168
10	102	2.50	0.00337
15	122	3.75	0.00506
20	152	5.00	0.00675
25	174	6.25	0.00843
30	190	7.25	0.00978
35	202	8.75	0.0118125
40	212	10.00	0.01350

WATER COOLING.

In Fireless Cooker. Time.	Cooling Temp. Degs. F.	On Top of Range. Time.	Cooling Temp. Degs. F.
— min.....	212	— min.....	212
15 min.....	198	15 min.....	180
30 min.....	180	30 min.....	152
45 min	168	45 min.....	140
1 hr.....	158	1 hr.....	130
1 hr. 15 min..	150	1 hr. 15 min..	122
1 hr. 30 min..	142	1 hr. 30 min..	116
1 hr. 45 min..	138	1 hr. 45 min..	110
2 hrs.....	132	2 hrs	106
2 hrs. 15 min.	128	2 hrs. 15 min.	102
2 hrs. 30 min.	124		
2 hrs. 45 min.	121		
3 hrs.....	118		
3 hrs. 15 min.	116		
4 hrs. 30 min.	104		
5 hrs.....	104		

The President—A question from the box is the "Best method of removing benzole from gas?" You have had a good deal of talk as to the best method of getting it in; here is a question as to how to get it out. I presume this is in connection with some of the coke oven plants, where the benzole is in the gas and a portion of the gas is burned under the furnaces. It seems to be a waste of a valuable product to burn the benzole as fuel gas. Can anyone give us any light on this subject? I think Mr. Ramsburg may be able to.

Mr. Ramsburg—The removal of benzole from coke oven gas is a matter of everyday accomplishment, and the method could certainly be adapted for the treatment of any kind of gas. It consists of scrubbing the gas with an oil of high boiling point and low vapor tension, which serves to take the benzole into solution very effectively, from which it can be removed by distillation. The removal is subject to the unvarying law of vapor tension, which involves not only the taking of the benzole from the gas, but necessitates the removal from the oil scrubbing system, slowly but surely, of the heavy oil by the gas. The amount of loss due to this cause is a large factor in the cost of such removal and should not be unconsidered.

(To be Continued.)

[Continued from page 929.]

PROCEEDINGS, FIFTH ANNUAL MEETING, ILLINOIS GAS ASSOCIATION.

HELD IN CHICAGO, ILLS., MARCH 17TH AND 18TH, 1909.

FIRST DAY—AFTERNOON SESSION.

The President—The next paper is entitled

ACCIDENTS: THEIR CAUSE, PREVENTION AND THE SETTLEMENT OF CLAIMS.

by Mr. C. S. Goodwill, of Springfield, Ills.

The privilege of reading a paper before this convention I esteem very highly. You realize that it is a very difficult problem to advance new ideas and recommendations in regard to the handling of accident cases. I will state that this paper is from a personal experience of about 10 years' duration in the handling of accidents in various forms - from the time the accident takes place, or is reported, until it is disposed of.

The first thing of course, is the accident—which we will take for granted has been properly reported; but let me say a few words in regard to this one point, and that is that very few cases are properly reported by the proper authorities. It generally works out that a great many cases are simply reported in a brief way, and no more is done until a claim is made or suit is started. Then it is a case of everyone get busy, and look for information in regard to the accident, which happened 6 months ago, which is hard to get and sometimes impossible to obtain.

There is probably no other branch of a corporation's business that will receive more consideration from a general manager than when a suit is started for from $5,000 to $20,000 or more; it makes him look up and think. Years ago people were hurt through the negligence of others, yet never a thought was given to making such negligent person or persons pay for the damage done. On the other hand the injured party was sympathetic and forgiving. To-day it is far different; for the benefit of those so inclined to make claims there are plenty of colleges turning out graduates every year to go out in different communities and educate the people to make claims in their own behalf—no matter who is to blame for their injuries—thus turning them into greedy, selfish, money-grabbing persons.

Lawyers are quick to say that the best feature of their business is the negligence case. Their clever interpretation of the law is always quick to concoct a theory which will make a case and carry their client into the court room, and, with their eloquence, captivate the unsuspecting jury into awarding heavy damages for the benefit of their client and themselves; the lawyer's part is from 30 to 60 per cent. of the amount recovered—usually.

Next to the grafting lawyer comes the great band of so-called medical experts, or, in other words, unprincipled doctors. These are the conditions which make it necessary for the corporation, or man possessing money, to seek relief.

My ideas may seem odd to some, but, as I stated before, I am going to give my own experiences, obtained through years of practice, which have been improved upon from time to time in regard to results.

The first thing I will take up is the making out of the accident report, which I will assume is a blank, ready to be filled out and with all the necessary questions (a sample which is used by the company I represent is attached hereto). You will agree that this blank covers almost any kind of an accident that may occur in any department, which I think is the most important part of the accident business; every question should be answered by the party, or parties who make out the report. This is usually done under the supervision of the superintendent or foreman, where there is no regular claim agent. The accident should be gone over thoroughly and every point brought out and put into writing; all witnesses' names should be attached to the report; by witnesses I mean people who saw the accident, people who were on the grounds just before the accident and immediately afterwards. If a doctor is called, get a written statement from him as soon as possible after the accident occurs; also have him state how he understood the accident happened, if he obtained such statement from the injured party.

A few words in regard to the duties of the department physician are not out of place at this time. The physician of a claim department is a necessity from the time the accident happens until a settlement is made.

It is to the advantage of the company to prove the extent of the injuries from the time of the accident, and as the case progresses, until such time as the case is disposed of. For this purpose a blank should be provided, every question should be answered fully, and particular attention should be given to the case from the standpoint of the attending physician. The claimant is usually guided by the judgment of the family doctor. During the progress of this examination the doctor should get a clear history of the case, as well as of the alleged accident. The previous condition of the claimant, in regard to sickness and accidents, is also important. If the party had been injured at any time previous to the time of the last accid ent, secure the names of the attending doctors at that time, or names of doctors who may have attended claimant at any time for any disability prior to the accident. In a great many cases this knowledge at the time of the trial is very important.

The plaintiff may try to show that all of his disability was caused by the accident, when in reality he had these defects before the accident occurred for which he is trying to recover damages. In a case of this kind, merely the names of doctors who had attended him previous to the time of the last accident, will put a different feeling into the plaintiff and make him tell lots of things that he would not think of or would not own up to before this. But as the names of doctors are mentioned who have attended him before, he usually tries to cover these things up, in the eyes of the jury, and in so doing exposes himself.

When the case is on trial the examining physician should be present and listen to the evidence of the plaintiff and his doctor, so that he may afterwards put questions in form to be asked him by the defendant's attorney; also, that the defendant's attorneys may ask the plaintiff and his doctors. Many cases are won in court by this form of proceedings.

A suitable blank having been provided for the accident report, and another for the physician's report, the next step is to have copies made for the use of the investigator, superintendent and general manager. Except for court use, the report should never be removed

from the claim department, or general manager's office. This rule should be strictly obeyed, as it is a bad proposition to have the original report lost. Suitable files should be provided for the care of accident reports, security and convenience for reference being considered. After all data is secured it should be filed together, except one copy of the original report, which may be used for reference in the superintendent's office.

The legal department should hold no papers in a case until such time as the case may come to trial, or litigation is started; the investigations should be complete at this time. It is well for the investigator to talk over such cases with the attorneys, directly after an accident occurs, unless he is well posted as to liability. When presented to the attorneys for trial, all papers in connection with the case should be copied and the original kept in the office of the company, copies being sent out to the attorneys for trial use.

A few words in regard to the party who may do the investigating. This is one of the most important positions that any company has to fill; he is the party who has the making or breaking of the company's defense. He should be an affable and courteous man at all times; his looks make him a success or failure, both from the company's standpoint and his own. He must be straightforward and honest in all his dealings with his company and the public at large; he must also be able to read human nature. Some investigators are inclined to color statements to favor themselves so as to make a good impression on those to whom they have to report. This is a mistake, and one of the worst faults such a person can have; for colored statements are of no use in court and are a disappointment to all concerned. An unbiased report is what must be obtained in all cases; then the party negotiating a settlement knows just what he has to deal with. If a company is to blame for an accident, they should know it, for the longer a case of this kind hangs fire, the harder it is to dispose of it. The party who does the investigating should be able to do secret work, if the case demands it, but such cases are rare and should be handled carefully. Signed statements should be procured in every case possible; a signed statement should be obtained from the injured party or parties, when it is possible. Always give the parties to understand that all the facts in the case are wanted, so that the blame may be placed where it rightfully belongs.

Instructions to Employees.—I think this the most important thing in connection with any company's business, or at least companies employing large bodies of men, as the only way to beat the accident business is not to have the accidents, and this can be done to a great extent by giving the employe.s instructions from time to time. This should be done by the superintendent, who must be well posted as to the proper methods of handling men to prevent accidents, and, should an accident occur, the proper way in which to handle that particular accident. This method is being adopted by nearly all railroads at the present time, and good results are being shown. It is surprising to know how ignorant some foremen are as to the importance of handling the accident business, as it should be; they do not seem to realize that some particular accident has cost their company several thousand dollars, and when this is shown them they are greatly surprised that such is the case.

The successful instructor is the man who can get the men to think for themselves, and get them interested in different ideas of their own which will prevent accidents. If you can get the foreman to feel when he goes to work "well, I am going through this day without an accident," you will have accomplished what you started out to do. And there is no question but that you will get results; you have secured honest effort, interest and co-operation.

One way to help a man is to lead him away from pitfalls peculiar to his work; vigilance is the price of safety. Give your men to understand that 50 successes do not justify 1 failure; 10 years' of faithful service cannot cover up one act of criminal carelessness. Foremen should see that proper barricades are placed while working on an open street; no excuse should be accepted for neglecting this work. At night no chances should be taken; red lanterns should be so placed that it will be impossible for a person to drive or walk into an opening of any kind. Foremen should not send men to work where they would not go themselves; this applies to gas works, or houses where there may be leaks. Matches should not be used for reading meters; an electric lamp should be provided for this purpose. In a gas plant a foreman should be thoroughly schooled as to the prevention of accidents, and should remember that an ounce of prevention is worth a whole lot of cures. On the other hand good work should be appreciated when an unusual occurrence takes place.

Where an escape of gas is detected it should never be approached with a light or flame of any kind, except an electric light. One man should not be allowed to investigate a leak alone; there should be more than one man, as one might be overcome by the fumes and possibly be found dead later on. A notice should be printed on all gas literature leaving the office, that consumers must notify the office in case of leaks or trouble with gas of any kind, also not to go near the leak themselves with any kind of a light.

One thing that our superintendent of the gas department has adopted is safety electric lights at the gas works. This is a lamp with a double globe, and I think should be used at all works. Precaution taken from time to time by the use of safety devices, the thorough schooling of employees, from the meter reader to the superintendent, will save thousands of dollars in the accident business every year.

In cases of asphyxiation the rules as laid down to our men to pursue are as follows: Free the body from clothing which binds the neck, chest or waist, thrust finger in the mouth and remove anything accumulated there; turn the body over, face downward, clasp the hands under the pit of the stomach and raise the body so as to compress the belly and expand the lungs and stomach; then lay body on its back, the head and chest slightly lower than the hips; draw the tongue out of the mouth and perform artificial respiration in this manner: Resting on one knee behind the head, seize both arms (which have been bent at the elbows) near the wrist joints, placing your thumbs on the little finger side, then, with sweeping horizontal movements, carry the arms over the head and give a strong pull for a few seconds; then bring the arms down in front of the chest and make strong pressure with them against the lower ribs for 1 second—about 16 acts of complete respiration being produced each minute. The body should be constantly rubbed toward the heart and warmth produced by hot bottles, brick, clothing, anything that will produce heat. These movements should not be abandoned until a competent person, or physician, can state that life is positively extinct.

Having covered the accident business in its various forms—from the time the accident occurs until it is prepared for settlement or trial—a few words may not be out of place in regard to the handling of cases in court. Attorneys should be very careful about picking out jurors. The superintendent or claim agent should always be present when this is done, as there is generally some one among the 12 men chosen who has a grievance against the company, or some of its officials; and this one man may influence the jury against the company in such a way as to have a verdict rendered in the plaintiff's behalf. It is very hard to get a jury of 12 men who will give a corporation a square deal, so it behooves everyone connected with the lawsuit to pick the list of jurors with the greatest of care.

Another thing, no underhand work should be allowed in the court room by the attorneys for the defendant, as this will make a strong impression on the public and the witnesses. Witnesses when subpœnaed by the defendant should be paid promptly and given to understand that they are going to be used right at all times, whether they are beneficial to the company or not. This feeling is everlasting and is bound to get good results in the future.

I present herewith blank No. 1, as mentioned, for regular accident report; No. 2 for team accident; No. 3 for accident to an employee, or this blank can be used for any kind of an accident, as it covers most all questions.

Form P. L. R.—5m.—2-09—668. **No. 1.**

REPORT OF ACCIDENT TO PERSON NOT AN EMPLOYEE.

In case of accident causing injury to any person not an employee, occurring in connection with the use of elevators, teams or ordinary business operations, the person in charge must make immediate report on this blank. In fatal or very serious cases use the telephone or telegraph.

(Not to be Used for Employees.)

Injured.	Name..... Full address..... Full address of premises at which accident occurred.. .....
Time.	Date and hour of accident.....190 .....M. Date of this report..... .....190.....

[*Form No. 1, Continued.*]

Injured Person.	Name.. ... .Apparent age... ....
	Address in full..... .....
	Occupation..... .....
	Where taken.....
Injuries.	Nature and extent.....
	Probable duration and extent of disablement.....
Full Description of Accident.	.....
	.....
	.....
	.....
	Was accident due to want of care upon part of injured?
	If so, how?.. .. ..
	What did injured person say as to cause?.....
	... .
Names and Addresses of Witnesses.	....
	....
Signature.	.....

225—5M—6-08—682. No. 2.

REPORT OF TEAM ACCIDENT.

In case of any accident causing injury to any person or damage to property, occurring in connection with the use of teams, the person in charge or representing the owner must make immediate report on this blank, over his signature; in fatal or very serious cases use the telephone or telegraph.

All questions on this page must be answered in every case; No. 24, specially complete.

1. Name of owner or employer.....
2. Business address of same.....
3. Location of accident.....
4. How far from nearest street intersection.....
5. Date of accident..... 6. Hour.....
7. Name of driver.....
8. Address of same.....
9. Age..... 10. How long employed by us.....
11. Where was he and what was he doing immediately before the accident.....
12. Name of other person, if any, on or about vehicle.....
13. Were they passengers or employees.....
14. If employees, what were their duties.....
15. When accident happened was our vehicle in motion .....
16. How fast.....
17. On which street.....
18. On which side of the street.....
19. In which direction.....
20. Was it loaded..... 21. If so, with what.....
22. If standing, for what purpose.....
23. Name and address of all persons who witnessed the accident or who claim to have witnessed it or who would probably know anything about it.....
24. Narrate below how the accident happened, its cause, etc., and illustrate by any marked rough sketch which you think will enable the accident to be more easily understood.....

.....
.....
.....

After answering all the above questions, those in Group A (see other side) should also be answered, if personal injury results from the accident.

In the event of pedestrian being run down, all questions in Group B should be answered in addition to those above.

If property damage results from any accident, all questions in Group C should be answered in addition to those above.

If accident is caused by runaway, all questions in Group D should be answered in addition to those above.

If accident is brought about by loading or unloading of our vehicle, all questions in Group E should be answered in addition to those above.

If collision with another vehicle is cause of accident, all questions in Group F should be answered in addition to those above.

(SEE OTHER SIDE.)

DO NOT OVERLOOK THE REVERSE SIDE OF THIS BLANK.

[*Reverse of Form No. 2.*]

Group A—To be answered only in case of personal injury.

Name of person or persons, if any, who were injured, or may claim to have been injured .....
.....
Address in full of such persons .....
Apparent age .....Occupation.....
Where taken after the accident.. .....
Nature and extent of the injuries.....
Probable period of disablement.....Was accident due to want of care on part of injured person.....
Where was injured person and what was that person doing at time of accident.....
What did injured person say as to cause of accident.....

Group B—Answer if pedestrian is injured.

In which direction was person moving immediately before accident .....
How far was person from regular crossing when accident occurred .....
Was person alone..... If not, by whom accompanied.....

Group C—Answer if property is damaged.

If any property was damaged, describe it.....
Where was it located.....To whom did it belong.....
To what extent was it damaged.....

Group D—Answer in case of runaway.

What, if anything, caused the team to run away.....
Was team hitched before running away.....Where was driver when team ran away.....
What was he doing.....

Group E—Answer if accident happened while loading or unloading.

What article was being loaded or unloaded at time of accident.....
What did it weigh.....Who was handling it .....
Who was helping.....
Describe defect in or about vehicle or appliances in use while loading or unloading that may have caused the accident.....
.....

Group F—Answer only in case of collision between vehicles.

Was any other vehicle involved in the accident. If so, describe it .....
Was it in motion.....How fast .....
On which street.....
On which side of street.....In which direction .....
Who was in charge of it.....Where was he.....
Was any other person on or about it; if so, who.....
Was that vehicle loaded; if so, with what.....
Date of report .....
Signature.....
Position with owner or employer.....

F75—5/0—12-'08. No. 3.

REPORT OF ACCIDENT TO AN EMPLOYEE.

Of.....
Of..... St.; City..... , State.....
(Give full address.)
asnuseis.....

If accident is fatal or involves serious injury, telegraph or telephone immediately to Employer's office—also when an inquest is to be held. Do not delay sending notice because unable to give all the information desired. Send a completed notice later.

1. Injured person's name?.....
2. About how old?..... 3. Weekly wages?.....
4. Occupation? .. .. 5. Married or single?.....
6. Address?.....street. 7. City or town? .....
8. State of? ..... 9. In whose service?.....
10. General duties?.....
11. How long employed at such duties prior to accident?.....
12. How long engaged on the particular work he was doing when hurt?.....
13. Had he done similar work prior to this employment?.....
14. Was the injured person familiar or not with the work engaged in or the machinery being operated at time of accident? (State extent of experience so far as known.) .....
15. Was he in full charge of the machine to extent he could start or stop it at will?.....
16. Describe machinery, tool, staging, etc., connected with the accident? (If possible, give rough sketch on other side.) .....
17. Was it sound and in good working order at the time of accident?..
18. Who can prove that it was?.....
19. State who responsible for seeing machine in good order?.....
20. When was it last inspected by him?.....
21. What was the result of such inspection?.....

[*Form No. 3 Continued.*]

22. Nature and extent of injury? .....
(If hand or arm, state whether right or left.)
23. Probable period of disablement?.....
24. Was injured person engaged in his regular occupation at time of accident?.. ....
(If not, explain fully under No. 53.)
25. What instructions had he received as to what he was doing at time of accident?.....
26. And who gave same?.....
27. Does injured person speak English?..... .....
28. If not, how were such instructions given?.....
29. Was he obeying such instructions when injured?.....
30. Taken home or to hospital?..... .....
31. If to hospital, give name and location?.. ....
32. Still in hospital or discharged? If latter, date of discharge?.....
33. Has the person returned to work....If so, when? .....
34. Did the injured employee ever give notice of any defect in ways, works or apparatus connected with accident? .....
35. Was any promise made to him that it would be remedied? (Give on other side full particulars of defect, promise, date of promise and repair, etc.).....
36. If so, was such defect remedied?.....
36a. Was the defect plainly apparent?..... .....
37. Did the injured person know of the defect?.....
38. If so, who can prove this?..... .....
39. Did the injured person make any statement after the accident as to its cause, or admitting his own carelessness; and if so what did he say and who heard it?..... .....
(Give names and address.)
Date of notice 190

[*Reverse of Form No. 3.*]

THE ACCIDENT.

40. Date.....190 Hour ..... 41. Place.....
City? ..... State?.....
42. What light was there at time and place of accident? .....
43. If others injured, give names and addresses. ....
44. Name and address of foreman in charge?.....
45. Has he power to engage and discharge workman? ..... 46. Or is he only an ordinary working foreman?.....
47. Where was foreman at time of accident, and what was he doing? ....
48. Names and addresses of all persons who witnessed the accident, or who claim to have witnessed it, or who would probably know anything about it. .....
Place a mark "X" against the names of those, if any, who were not our employees at the time of the accident. .....
49. Have any of the above been discharged or left our employ since? If so, give names and state whether "discharged" or "left" voluntarily. .....
50. Was there any hidden defect in anything connected with the accident, which the employer would be more likely to have noticed than the injured person? .....
51. Has any other accident ever occurred to any of our employees under similar circumstances, at the same place, or with the same apparatus? .....
52. a. Was accident due to want of ordinary care on part of injured person? a.....
b. To neglect of any other person? b.....
c. If so, of whom? (Give name and address.) c.....

53. Narrate below how the accident happened, its cause, etc., and illustrate by any marked rough sketch which you think will enable the cause of the accident to be easily understood.
.....
.....
.....
Notice made out by.....Position with employer .....
Business address.....street, city.....State .....

I wish to say, regarding the settlement of claims, there is no regular rule that can be laid down. A case may be settled at any time from 1 hour after it happens until the case comes to trial. It would be very hard to outline any method of doing business with that in view.

Discussion.

The President—We have listened to a very interesting paper, which I hope will have full discussion. I will ask Mr. Schmidt, of Springfield, to say a few words on this subject.

Mr. Schmidt—I don't believe gas men realize the importance of this question. People operating street railroad companies know that 4 or 5 per cent. of the gross earnings are used up every year in this way, and if that were the case with the gas companies they would sit up and take some notice. I will say this for Mr. Goodwill, who just read the paper: When he took charge of our claim department, a few years ago, it was costing us 5 per cent. We have cut it down to 3 per cent. within the past year, and have accrued a very nice fund. What he says is true. You cannot lay down any hard and fast rules on this question. Some men are peculiarly fitted for this class of work, and I believe Mr. Goodwill is one of them. I could not do it, because I would get angry if they tried to hold us up. He does not lose his temper. It is true that the average manager does not pay enough attention to getting in testimony or the statements of witnesses just as soon as an accident occurs. A case in mind occurred in Springfield. We were dismantling an old station, and hired some firm to take down the stacks. While they were taking them down, one of their men fell through a hole in the roof and was killed. We did not pay any attention to it, for we thought that our contract with the firm made them liable. About a year or so after that we were sued. That is, complainants sued both company and contractor. The jury found the contractor was innocent but that we were guilty, and fined us $5,000. We took that case to the Supreme Court, but had to pay the $5,000 just the same. Since that time we have been a little bit careful. When anything happens, you see us scurrying around, taking photographs and getting all the statements we possibly can. In Peoria a case happened in which we hurt a man and had to settle; in fact, we have had so many that lately we have taken out employer's accident insurance. We tried to protect ourselves against those things, but we had to take out employer's liability, and I don't think that any gas company, no matter how small it is, can afford to neglect even the smallest accident. It is a good thing to get all the testimony together that you can, and then in case of suit you have it. People forget about those things in a year or two, and it is a pretty hard thing to go before a jury, if you have no defense, for the chances are you will get the worst of it if you do.

Mr. Olds—I quite agree with Mr. Schmidt, for I don't believe gas men fully appreciate how important it is to report all accidents. I know from experience, I have failed to report very slight accidents, which afterwards terminated in something that cost us money. I also do not believe that we appreciate the liability policies we carry in our companies. These policies sometimes make us groan, when we have to pay the premium each year, because we do not seem to get anything back. The people in the liability business say we should report every accident, no matter how slight it is. When I was operating a company at Bloomington, Ills., we had an accident, in which a man fell into a tar well and was badly injured. We took care of him and he was apparently all right, but 2 years afterwards he sued the company. He did not gain anything by the suit; it was finally settled out of court for something like $200; but if we had carried a liability policy the probability is we would not have been sued. I think it quite an important thing to see that all accidents are promptly reported.

Mr. F. A. Parker—In the question of accidents I agree with both the author and with Mr. Schmidt that it is a very important one, indeed. Speaking from the gas and electric end of it, I can say, from an experience of a number of years, that we were careless in reporting what we would call small accidents, which we did not deem of any special importance; but I now recall a case that happened several years ago, where we had what we thought was a rather small accident. We took just a little evidence in the case, and, lo, and behold! In a short time suit was brought, and eventually we paid many thousands. After that we sat up and took notice, and our policy from that time on, and now is, no matter how small an accident it may be, we endeavor to get every scrap of information and evidence at once. Then we are in a position to fight the case if

necessary; but my policy is, if it is possible, to settle a case within reasonable limits, to do so just as soon as possible.

Mr. Newberry—I would like to say, in connection with this paper, regarding personal injuries or accidents, that I think we do not pay enough attention to this particular branch of our business. It is very important that photographs should be taken as soon after an accident happens as we can get the photographer on the ground. I had some experience several years ago, with the Illinois Steel Company, in connection with their claim department, where I was employed. You would be surprised to note the details and the amount of information that the Illinois Steel Company wrap around a personal injury accident. No matter how small it may be, photographs are taken of the machine or place where it happens, at different angles. The men in the claim department work in 3 shifts of 8 hours each, and in case of an accident, the claim agent's office is notified immediately, and he goes post-haste to where the accident happened. If the man has been removed to the hospital, if it is a serious case, the man who goes to where the accident happened, takes a photographer to the scene, where photographs are taken. Photographs are taken at all different angles, focused right on the particular piece of machinery that injured the man. Those photographs are developed, and the claim runner, or the claim man in charge of that particular shift, goes to the man at the hospital, or maybe at his home, and gets the detailed statement from him. As you know, the Illinois Steel Company are very strict indeed in regard to allowing anyone to see their injured men. It is very hard indeed for anybody from the outside to get into their hospital even for a conversation by an immediate member of their family. Then the statements of the witnesses are taken, and they, with the photographs and the statement of the injured person, are all bound together in one volume and filed away. That claim may never come up, but in case it ever does, they have all the details, from A to Z, prepared to go into court at a minute's notice with all the data necessary to fight the case. I think we pay too little attention to what we call minor details. I think that photographs of this kind, even in the gas business, should be taken without delay.

Mr. E. G. Schmidt—I might offer a suggestion. When I was younger I used to like to fight, but I have found by experience that it is very much easier to settle with a man, in case he is willing to take a reasonable amount, and get a release from him. Oftentimes you can get a release for $10, $15 to $25 that, if permitted to go to suit, would cost you from $100 to $150, even though you should win out. We have had large judgments rendered against us, where we thought there was no liability, so it seems a pretty good plan to accept a reasonable settlement where such is obtainable.

Mr. Steinwedell—I have not had any accidents for a good, long while, but I do think it is a very good plan, though, to keep track of all accidents, especially in the operation end of the gas works, when you are putting in pipe extensions, or in any sort of work around the city in connection with such work.

Mr. Johnson—The only branch of claim adjusting with which I have had any experience is dealing with accidents to employees. The point has been well brought out as to the importance of paying attention to small accidents. I first realized that in my own experience when I had an employee knock a little skin off his finger, which resulted in blood poisoning, and another having a slight cut, which resulted in his getting erysipelas and nearly dying. Then I began to realize that it was important. Another phase to this question, is it important the company should have all the details of those accidents; but it is also important to an employee not to make too much of it. Among an ignorant class of men you will very rarely have any trouble if the foreman or the superintendent, or whoever is directly over them, deals with them personally. If they work for one man any length of time they have a certain amount of confidence in him. The man in charge can go to them in a fair sort of a way and find out what they are willing to settle for. We never have any trouble, for the employees feel that we take an interest in them. If you investigate these claims too much they begin to get the idea that they have a claim of some importance and can get something out of it. For that reason I think it is generally the best way in large corporations, where they have a claim department, when they have cases to settle with their own employees, to let the man who is over the injured party settle with him, for he can do a whole lot more with him than any claim agent can do if he goes at it right. I think he can save a whole lot of money for the company. I have seen cases where an accident to an employee has been turned over to a claim agent, and the minute it was turned over, that employee would have no dealings whatsoever with the company, but would go straight to a lawyer's office with his case. In many cases the operating man, or the man directly over the injured one, could talk to the man and tell him that the company would take care of him and he would not lose any time. The man would then think nothing of it, and when he came back would sign a release. You can tell him it is a matter of form to sign a release. I think it is very important to be very careful with our employees and not to impress them too much with the importance of their injuries.

Mr. Schmidt—I agree with the last speaker, except on the point that the average operating man is hardly competent to determine the liability of the company. When you have an accident it is well to report it to the claim agent, or to the attorney, then let that department go ahead and get the evidence in the case. You may not hear anything about it for a year, and finally some lawyer gets hold of it, and you will find it is a mighty hard thing, unless you have enough testimony, to fight the case, or settle it.

Mr. Johnson—In my remarks, I did not mean to say not to report it to the claim department. That is the first thing to do. What I meant was, to have the operating man settle, let him deal with the man.

Mr. Roper—I was not here when the paper was read, but I have heard enough of the discussion to know from experience that it makes a great deal of difference, and the principle difference is where you are located. We never have had a lawsuit on a claim, and we settle up all our cases. We have no casualty insurance, but we know every man, and we do not even pay them their wages. The superintendent or the foreman will pay the wages, or part wages, or give to him what he thinks is necessary. We send the man, if it is necessary, to the hospital, pay all his bills there and his doctor's bill, and then give him what is necessary. But if you are in Chicago, or some other cities that I can name in this State, you have a labor organization with several agitators, a lot of ambulance chasers, with a few shyster lawyers, and it is an entirely different question. I believe that it is a local issue. I do not think one man can tell the other man how to settle it, and I do not believe any city is a criterion as to what can be done in another. What I can do in Rockford I know could not be done in Chicago to-day.

Mr. Schmidt—If you had included a street railway in your combination there, you would have an ideal combination.

Mr. Roper—I think the street railways have the soft end of the job. They get their money first. It doesn't make any difference when they pay it out. [Laughter.]

The President—If there is no further discussion I will ask Mr. Goodwill to reply to the suggestions of the gentlemen who have spoken.

Mr. Goodwill—I believe I have nothing further to say, only to remark that Mr. Roper, I think, has the right idea. In our town, when we have an accident, of course, 99 out of 100 of our accidents are street railway cases, not saying that we have an awful lot; but we do have some. When we have one we can find anywhere from a half dozen ambulance chasers on the ground, and the fellow who is there first is the one who does business. That is all there is to it.

Adjourned to 9:30 A.M., March 18.

(To be Continued.)

Gas Engines and High Pressure Fire Service Stations.

Last March a contract was closed by the authorities of Philadelphia for the equipment of a high pressure fire service station, which is to be practically a duplicate of the Delaware avenue fire station, which has been in service for a number of years with very marked success. The new plant is to be located at 7th and Lehigh avenues, in the Kensington mill district, and its water supply will come from the old Fair Hill reservoir entirely.

The work is in charge of the Millard Construction Company, as general contractor, the detail engineering work being in the hands of the Scofield Engineering Company.

The first contract covers ten 300-horse power Westinghouse, vertical, single-acting, gas engines, direct-connected to Deane triplex pumps; also, in addition, a 140-horse power unit for auxiliary purposes. In fact, the equipment is practically a duplicate of the Delaware avenue station. It will take its power gas from the city mains of the U. G. I. Company, as in the case of the Delaware avenue station, and two large holders at different points in the city can be drawn on for the supply.

The decision to again use gas engine driven pumps for this high pressure fire service is particularly interesting in view of the discussion which took place previous to, and after the installation of, the Delaware avenue station, which was chiefly in favor of electrically driven pumps, as was done in New York city.

A study of the first year's operation (1904) of the Philadelphia station shows the sort of results obtainable from an installation of this kind. As that was the first year's operation of the plant, it was

Interior of High Pressure Fire Service Pumping Station, Delaware Avenue, Philadelphia.

Test of High Pressure Stream Outside City Hall, Philadelphia.

expected that the maximum interference from troubles, operative and otherwise, would be encountered, but the year's record shows not a single case of failure to start, either in the actual fire service or in the numerous experimental runs which were made to test out the equipment. During the year there were 32 alarms and 9 actual services of considerable duration, the services varying from a few minutes to 24 hours. The large pumping units ran 337 hours, the small ones 198 hours during the year, with a total pumpage of 27,000,000 gallons. The average cost per 1,000 gallons pumped, including all the experimental runs, which were by far the major portion of the service, was 12.5 cents; but for a large fire of 5 or 6 hours' duration the cost of pumpage is barely over 5 cents per 1,000 gallons. On the average, any unit could be put upon the system at 300 pounds delivery pressure in from 45 to 60 seconds from the time of giving the signal from fire headquarters. Further, the entire station could be gotten under way in from 7 to 10 minutes.

In ordinary operation, however, only one or two units will start on the first signal, these being sufficient to start operations. Further units can be put on as the service may require. The cost of power is practically proportional to the pumpage. The total cost of repairs on the gas engines, totaling 3,000-horse power, from their installation up to December, 1905, was $3.05. The system of compressed air for starting the gas engines has never given out when called upon, and the storage pressure of 200 pounds may be replaced within 1 or 2 minutes after the starting of the single engine. In fact, 7 large engines at Philadelphia have been started with only 98 pounds drop, without assistance from the compressor. In practice several of the storage tanks are held in reserve for use only in case of a serious breakdown of the compressor.

Likewise, the gas supply has never failed. Considering that at least two large sources may be drawn upon, it is considered fully as dependable as electricity from underground feeders. The most interesting feature of the Philadelphia situation is the attitude of the insurance authorities. Prior to the establishment of the Delaware avenue station the insurance underwriters had imposed an additional charge of 25 cents per $100. On the completion of the test of the high pressure pipe line (May, 1902), a first reduction of 15 cents per $100 was made. On the final test of the gas power station (April 18, 1905), the balance of the extra "pink-slip" charge was removed and the system was declared approved. Formerly of a most decided conservatism toward gas engines, the authorities then expressed their complete confidence in the new system by suggesting extensions to the initial system. The making of the recent contract brings these suggestions into material form, and the net result will be a general reduction in fire rates in the districts affected in addition to the protection afforded.

The illustrations show, generally, the character of the Delaware avenue station, and the result of a test of one of the high pressure streams at a point farthest from the pumping station, 15 blocks from the river front. This station is under the control of the Department of Public Safety, of which Henry Clay is the capable Chief.

On and after the first prox. the gas rate at Grand Forks, N. D., will rule at $1.50 per 1,000 cubic feet, with a readiness-to-serve charge permissible that amounts to 50 cents per month.

Bureau of Information, The American Gas Institute.

Under the direction of the Institute it has been decreed: 1. That the privilege of submitting questions be limited to members of the Institute. 2. Neither the Board of Directors of this Institute, nor the Institute as a body, make themselves in any way responsible for the statements of fact or expressions of view given out by the Bureau of Information.

BUREAU OF INFORMATION, THE AMERICAN GAS INSTITUTE,
HEADQUARTERS, 1943 COMMERCIAL NATIONAL BANK BUILDING.
W. A. BAEHR, Chairman. CHICAGO, ILLS., May 18, 1909.

Question No. 50 of the Bureau of Information was as follows: "What relation should the capacity of the gas bag, or tank, usually placed before the inlet of the gas engine, bear to the gas consumption per minute of the gas engine, in order to prevent any fluctuation in gas mains from which service to the gas engine is taken, without the use of any other governing device?"

AN ANSWER BY THE BUREAU OF INFORMATION.

In order to overcome the fluctuation in pressure caused by the intermittent suction of a gas engine on the gas supply line, it is necessary to have a reservoir of gas, which can be supplied continuously from the meter without the pressure being affected by the intermittent charge given to the engine. Owing to the hit-and-miss governing of most gas engines, the gas is not used by the engine at a constant rate per minute.

The use of a rubber bag or solid tank will not entirely prevent the fluctuation of the pressure unless it is very large. Assuming a maximum pressure of 2 inches, and an allowable fluctuation of 2-tenths inches, the volume of a solid tank to supply a charge to the gas engine would have to be about 12 times the cubic feet of gas consumed per minute. This, making allowance that one-fourth of the charge is being supplied to the tank while the engine is drawing the full charge out, is obtained by using Boyle's law and absolute pressures. When a rubber bag is used there is a slight elasticity in the vessel which will assist the expansion of the gas toward keeping the pressure constant. The ordinary rubber bag for a gas engine has been reinforced with cloth, which prevents any elastic expansion, and consequently, for one charge to the engine, the bag is practically a solid tank if used alone.

ANSWER-AT-LARGE.

By Mr. H. W. Jones, Supt., Gas Engine Dept., Peoples Gas Light & Coke Co., Chicago.—"In answer to your favor I want to say that the type of engine must be taken into consideration. For instance, a 20-horse power. Is it a hit-and-miss, or throttling governor? Is it a single cylinder or double cylinder; and, again, what load does engine pull; also, what is the peak load? Then, what is pressure of gas at meter outlet, and what is distance from meter to engine? The longer the run the bigger the pipe must be, and the easier it can be made for the engine to get gas, and the quicker it gets it the better. Also, the gas should go into the engine cool.

"Now, it follows that it is volume the engine needs, and pressure and flow to keep the bag full. The size of bag cuts no figure in the case at all, so it will give one full charge, but the supply pipe must

be fully adequate to furnish another charge at once, or when needed. In a 100-horse power engine, throttling governor, 3-cylinder, installed in this city, there is no gas bag at all, and the pressure is cut down to 2-tenths pressure at a point 10 feet from engine. When engine is operating there is a constant suction showing on gauge 3-tenths inches vacuum. On another we have a gas tank 24 inches by 40 inches, each being installed by the makers and both throttling engines, same size, same load, or practically so. Which is proper? Well, I'll be honest—I don't know.

"*But*, a rubber gas bag is a fraud, a delusion and a snare; an iron tank is better, better for fluctuation or any and everywhere else, also cheaper, safer, cleaner and put right where it belongs, *close* to the engine.

"As for fluctuations, the gas is taken away quick and, irrespective of how big the gas bag may be, the fluctuation is there just the same, but, of course, decreases in intensity. The gas tank is as good as a bag in this case."

Question No. 29 of the Bureau of Information was as follows:

Question No. 29.—"Does very rapid condensation tend to reduce the permanent illuminating power of coal gas? Experience shows that the illuminating power of coal gas, when condensed very slowly, is considerably higher at the works than when the gas is condensed very rapidly. In the latter case, however, there is apparently much greater loss of illuminating power in distribution, especially in cold weather, due to the condensation of the heavier hydrocarbons. It is evident that it is possible to install gas condensing apparatus, costing less than half what the approved apparatus costs, but in which the work would be done very rapidly and also very efficiently so far as the use of cooling water is concerned. Would the use of such apparatus result in an appreciable loss of illuminating power at the consumers' burners as compared with the use of the present approved types of apparatus?"

The Bureau published its official answer[1] to this question some time ago, but wishes to add to its answer the following:

"In addition to the official answer of the Bureau of Information to Question No. 29, the Bureau suggests perusal of the subject marked 'Condensation,' as given on page 1015, Vol. III., Proceedings, American Gas Institute, 1908."

The following question was received by the Bureau of Information:

Question No. 52.—"What companies are using automobile trucks in any part of their distribution work, and do they find same to be an economical investment?"

ANSWER BY THE BUREAU OF INFORMATION.

The official answer of the Bureau is as follows:

The Bureau of Information submits as its answer to this question, the experience of Mr. R. M. Searle, of the Rochester (N. Y.) Railway and Light Company, which is as follows:

"The Rochester Railway and Light Company is using an electrical automobile truck in the underground cable department. This truck is for distributing large reels of cable, and is also used for pulling same in the conduit system. We find that this truck will pull in more cable in 1 day that formerly required a team 4 days to accomplish. We intend in the near future to supplement this equipment with two more, as the results obtained indicate this electrical truck to be an economical investment.

"We have had this particular truck approximately one year, buying the same second-handed and costing $2,400. After running this truck 3,000 miles, the tires are evidently equal to another year of the same use. We spent $150 for battery renewals, and about $50 for other additional repairs. The cost of current is practically our generating cost, as truck is charged off of the peak.

Cost of truck		$2,400
Int. and depreciation 15 per cent	$360	
Repairs	200	
Charge current at cost	750	
	$1,310	

"This amounts to $.43 a mile. We have no record of the tonnage carried or the miles of cable pulled in, consequently data may prove somewhat unsatisfactory; however, the results obtained are far from being so."

The following question (No. 54) was received by the Bureau of Information:

Question No. 54.—"In the matter of gas lamps, which are owned by gas companies and are rented to consumers, are there any cases where the rental system has not proven satisfactory, or where another system has proven satisfactory?"

1. See JOURNAL, *ante*, May 3, p. 785.

Items of Interest
FROM VARIOUS LOCALITIES.

MR. W. J. MURPHY, General Manager of the Grand Forks (N. D.) Gas and Electric Company—he is Publisher of the Minneapolis (Minn.) *Tribune* as well—and wife, sailed for Europe from New York, some days ago. They are accompanied by 2 daughters and 2 sons, and, having reached the other side, they will tour Europe after the manner of automobilists. Their programme calls for an absence of 5 months.

CERTAIN Cleveland capitalists have secured a franchise for the operation of an oil gas plant in Appalachicola, Fla. It is possible that a water gas plant will be installed.

GENERAL MANAGER FINDLAY proposes to branch out in the matter of making and distributing gas in Orange County, N. Y. We judge so from the fact that he has filed from his headquarters in Goshen, a notice, with the Secretary of State, that the Goshen Illuminating Company proposes to extend its business territory so as to conduct operations in the following places: Malden, Florida, Warwick, Tuxedo, Chester, Monroe, Woodbury, Blooming Grove, Cornwall, Hamptonburg, New Hampton, Montgomery, Central Valley and Highland Mills.

THE shareholders of the Chelsea (Mass.) Gas Light Company have ratified the project to consolidate their interest with those of the East Boston Company. The transfer was made "at evens."

MR. F. S. DRAKE, General Manager of the Northwestern Gas and Electric Company, of Walla Walla, Wash., has been replaced by Mr. George D. O'Connor; and Mr. B. F. Brackett, in charge of the electrical division of the Company, has been succeeded by Mr. R. M. Atkins.

AT the annual meeting of the shareholders of the South Jersey Gas, Electric and Traction Company, the officers elected were: Directors, D. Baird, F. Bergen, J. H. Blackwell, Jno. J. Burleigh, F. F. Dryden, A. R. Kuser, R. V. Kuser, Thos. N. McCarter, U. H. McCarter, E. J. Moore, F. W. Roebling and W. J. Thompson; President, A. R. Kuser; Vice-President, Jno. J. Burleigh; Secretary, E. W. Howe; Assistant Secretary, H. C. Stevenson; Treasurer, Chas. G. Cook.

ON and after the 1st prox. the selling rates in Jacksonville, Fla., will be as follows: On illuminating account, $1.50 per 1,000, less 15 cents per 1,000 for prompt payment; on fuel account, $1.50 per 1,000, less 25 cents.

THE next session of the Massachusetts Legislature will be called upon to consider the good policy of permitting the sliding scale to apply to all the gas companies of that State. It is said the Board of Gas and Electric Light Commissioners will not oppose the proposition.

THE proprietors of the Schenectady (N. Y.) Illuminating Company have certified to the Secretary of State an increase in its number of Directors from 3 to 9.

A CORRESPONDENT in Chicago, forwards the following, under date of the 20th: "Not long ago 19 applicants began a 2-day civil service examination for the position of Chief Gas Examiner for the city. The position, which will be worth $2,500 to the holder thereof, was created by recent ordinance, which prescribes daily tests for quality, pressure, lighting value and heating power of the gas supplied. Three testing stations are provided for, and the Chief Inspector will have 3 assistants, at $1,200 each per annum."

AT the semi-annual meeting of the Ocean Grove (N. J.) Camp Meeting Association, the Reverned Dr. Aaron E. Ballard, President of the Association, disclosed that the Directors had practically agreed upon a plan of action under which the residents would have a gas supply in the year 1910.

THE H. Mueller Mfg. Company, in order to facilitate the carrying on of its branch offices in Chicago, has removed from 48 Dearborn street, that city, to No. 37 Dearborn street. This substitution is a grateful one, both to its customers and the Company. Mr. M. R. Whitney is Sales' Manager in Chicago, and the Office Manager there is Mr. F. L. Hays, Jr.

We are now informed, by the Associated Press once again, that Col. John Jacob Astor has perfected a process by means of which he can produce an illuminating gas of great heat unit value from peat. So far we have no statements giving analyses figures nor has the story gotten to the point where quantities per pound of peat are given, so we await in patience these lesser, though absolutely necessary details. The name of his apparatus sounds well, if syllabification counts for aught over the discovering, in that it is known to science as a "vibratory disintegrator."

Mr. C. I. Bowe, as Manager of the Huron (S. D.) Electric Company, has sold all right and title in that concern to Coler Campbell, acting for the Huron Gas Company. Under its charter obligation the Company is obliged to pay into the city treasury 1 per cent. on its gross receipts.

Mr. S. J. Chapman has resigned the position of Superintendent of the electric division of the business of the Canton (Ills.) Gas and Electric Company. The Company has consolidated both divisions of the manufacturing ends of its business, all of which hereafter will be supervised by Mr. Earl Negley.

During April the Public Service Commission for this district tested 31,155 gas meters. Of these 305 were tested on complaint, 3,653 were new meters, and the remainder were meters tested after repairing. The percentages returned were as follows: Correct, 14.4 per cent.; fast, 50.2 per cent.; slow, 35.4 per cent. The percentage of error over all, however, was found to be 2.96 slow.

"T. V. M.," writing from Boston, Mass., under date of the 22d inst., incloses the following: "The Board of Gas and Electric Light Commissioners has issued its first decision with regard to a holding Company, in the case of gas consumers in Leominster against the Gas Company of that town, which is one of the component parts of the Massachusetts Lighting Companies, a West Virginia corporation which recently took over the gas and electric lighting companies in North Adams, Adams, Williamstown and Stamford, Vt. General Morris Schaff, a member of the Commission, says it is the most important decision made by the Board in years. It is a decision on the petition of the consumers in Leominster that the maximum charge for gas shall be reduced 20 cents per 1,000 cubic feet. The Leominster consumers charge that the expenses for management were excessive. It appeared that those expenses had nearly doubled since the Massachusetts Lighting Companies took charge. It further appeared that in the cases of some companies no charges were made for the management, and that in the case of others, including the Leominster, the charges had nearly doubled. The Springfield *Republican*, commenting editorially on the decision, says that it established the precedent that Massachusetts shall be made not a refuge for companies which buy up other corporations and exploit them to the detriment of the public."

The proprietors of the Bisbee (Ariz.) Light and Power Company report that the gas output in that city will be at least 75 per cent. greater than that reported for the year 1908. The real cause of the increase was the extension of the Company's mains to and through the district known as "School Hill."

Mr. Learned has laid out the way for the connecting line, between the works of the Meriden (Conn.) Gas Light Company and the Southington district. The main line will run from the Meriden works to a point north of the Beaton & Corbin Company's shops, and will follow the trolley track from Meriden to Milldale. Take it all-in-all, it means the placing of 9 miles of trunk and 6 miles of laterals. If all goes well Mr. Learned will pipe to Cheshire next year. He is always on the job.

Last week we had occasion to mention the fact that the contract for the gas machinery ordered for the equipment of the new plant at Charles City, Ia., had been awarded to the Gas Machinery Company, of Cleveland, O. This week a correspondent forwards the following respecting the like subject: "Charles City, Ia., has felt the need of a gas supply for some time, and Mr. Z. T. F. Runner, of Freeport, Ills., about a month ago, secured the necessary franchise for the construction and operation of a gas plant in the named place. Mr. R. K. Runner, Secretary of the Charles City Gas Company, was appointed General Manager thereof, and he is now actively engaged in supervising the construction of the buildings, the laying of mains and services. The Gas Machinery Company, of Cleveland, O., was awarded the contract for furnishing the water gas set, relief holder, exhauster, boiler, purifiers, meter, storage holder, oil tanks and governor, as well as all other machine parts required for the complete works. Charles City is growing at an amazing rate."

Mr. Chas. L. Stuerwald, Manager of the Citizens Light and Fuel Company, of South Amboy, N. J., writing under date of the 25th inst., says: "In your issue of May 17th you have an article stating that I am to retire from my present position to go into the manufacturing of handkerchiefs. Kindly advise me where you got your information, and also kindly contradict the statement in your next issue. Your attention to this matter will greatly oblige."

We do not know what the particular practice of the newspapers in South Amboy, N. J., is as to revealing the names of those who furnish information to them; but we imagine it is quite like that which is followed in such respects by New York newspapers. That practice is to keep inviolate the names of correspondents. As to the contradiction. Well, that is gladly given, one reason for the glad feeling being that Mr. Stuerwald proposes to go along in the business of spreading the light in one of New Jersey's oldest cities.

The Gas Bench Construction Company, of St. Louis, reports that it is making a specialty of high grade water gas linings and checker-brick, and recently has received orders of these water gas material adjuncts for the gas companies at Freeport, Decatur, Champaign and Chicago Heights, Ills.; Fort Worth, Tex.; Beatrice, Neb.; Bloomington, Ind.; Mobile, Ala.; Charles City, Ia., etc.

Mr. John N. Hamilton, as Trustee in Bankruptcy of the Huntsville (Mo.) Light and Power Company, by virtue of an order issued by the Hon. F. W. Weper, Referee in Bankruptcy in the District Court of the United States for the Northern Division of the Eastern District of Missouri, was to have offered all the properties of the defunct Company at auction last Saturday.

The gas and water plants operated in Talladega, Ala., need much repairing, so the authorities are preparing to make an issue of $20,000 bonds, the proceeds from the sale of which are to be dovoted to paying for the necessary reconstruction. Address the Mayor of Talladega.

That producer gas is gaining ground in the industrial field is undoubted. An illustration up-to-date is shown—so writes a correspondent—in the recent action of the management of the Salisbury (N. Y.) Steel and Iron Company's mines in Herkimer county, N. Y., which is installing a gas engine plant with anthracite producers to operate its mine shafts and concentrating mill. The initial equipment will comprise a 600-horse power horizontal and a 125-horse power Westinghouse vertical engine, both having generators. The power house will be located a few hundred feet from the mill and about a mile from the shafts. An interesting feature in this determination came about through the competition offered by a water power plant located but 6 miles distant. Although offering current at a very low rate, it was considered possible to produce power at a still lower figure by means of producer gas.

"B. V.," writing from Galveston, Tex., under date of the 20th inst., says that the Huron (S. D.) Electric Company will hereafter be operated as a division of the Huron Gas Company's business possessions.

The Anthra Coke Company, of New York city, has been incorporated by Messrs. R. Farnham, Jr., Washington, D. C., and Messrs. A. G. Maul, P. Vanderleer and A. J. McElhane, of New York. They propose to work up to a finality, in colors, chemicals, etc., the tar and ammonia produced in coal gas plants.

Mr. J. S. Norris, Treasurer of the Montreal Light, Heat and Power Company, seems to have had his way with his associates over the good policy of reducing the gas rate, although under the agreement with the city authorities the Company could charge $1.20 per 1,000 cubic feet up to December 31, 1909. In fact this is the second reduction made since the agreement noted went into effect. Last year the Company cut the net rate to $1.15, and this year (the reduction is dated back to gas sent out since the 1st ult.) a further cut of 5 cents was ordered. So gas is now being sold in Montreal at $1.10 net per 1,000. Gas men from the States, who will attend next June the convention of the Canadian Gas Association, in Montreal, will learn of some very interesting things concerning that which is going on there respecting the placing of the Montreal plant in good physical condition.

The Market for Gas Securities.

There was no particular change in values over Consolidated gas shares last week, the figures, bid and asked, showing only ¼ point difference, which difference was on the low side. At noon to-day (Friday) the quotations came in 143¾ to 144. The rebaters are not going to get interest on the retained money, at least that is the decision of the Supreme Court. The flimsy contention on which the claim was based was that the original law, having been upheld by the U. S. Supreme Court, the rate was in effect when the measure was signed by the Governor. The proceedings estopped the act, and it would have been far nearer sound law if the Company contended that the rate cut should not have gone into effect until the U. S. Supreme Court had decided that it was proper it should become effective. For it has been held by many a minor judge that the *ipse dixit* of the Legislature declaring this "Act shall take effect immediately," is not a part of a legislature's right to make laws that will work immediate, maybe dire, hardship at the outset through their immediate summary enforcement. The general market is strong.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

MAY 31.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated Gas Co.	$78,177,000	100	143¾	144
Central Union Gas Co.—				
1st 5's, due 1972, J. & J.	3,000,000	1,000	98	101
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	3,500,000	100	155	165
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	100	101½
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	100	101
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	104	107
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	94	100
Standard	5,000,000	100	—	75
Preferred	5,000,000	100	70	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	138	140
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	999,650	500	130	—
Out-of Town Companies.				
Bay State	50,000,000	50	1¼	1¼
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	90	96
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	60	60¼
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,000,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	20,500,000	100	92	93
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus (O.) Gas Lt. & Heating Co.	1,662,750	100	90¼	91
Preferred	3,028,500	100	75¼	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,600,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,400,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	458,000	—	102	105
Detroit City Gas Co	5,000,000	50	—	80
" Prior Lien 5's	4,619,000	1,000	97	100½
Detroit Gas Co., 5's	881,000	1,000	75	80
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	30	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	112	113¼
" Bonds, 5's	10,500,000	—	103	103½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis.	10,000,000	100	—	100
Preferred	2,500,000	100	60	90
Bonds	10,000,000	1,000	104	104½
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	108	108½
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	65	65½
Preferred	25,000,000	100	90	90½
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	86	88
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	113½	114
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104½	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—				
1st Mtg. 6's	751,000	1,000	100	102
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112¼	115
General Mortgage, 5's	2,465,000	1,000	90	95

Advertisers' Index.

GAS ENGINEERS.

Bartlett-Hayward Co., Baltimore, Md. ... 1005
Cruse-Kemper Co., Philadelphia, Pa. ... 992
Davis & Farnum Mfg. Co., Waltham, Mass. ... 1004
Economical Gas Apparatus Construc. Co., Toronto, Ont. 982
Evens & Howard Firebrick Co., St. Louis, Mo. ... 1000
Frank D. Moses, Trenton, N. J. ... 986
Frederick J. Mayer, New York City ... 985
Henry I. Lea, Chicago, Ills. ... 1004
H. M. Byllesby & Co., Chicago, Ills. ... 1004
Humphreys & Glasgow, New York City ... 1004
Improved Equipment Company, New York City ... 986
Isbell-Porter Co., Newark, N. J. ... 992
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 1005
Laclede-Christy Clay Products Co., St. Louis, Mo. ... 990
Parker-Russell Mining and Mfg. Co., St. Louis, Mo. ... 989
Quintard Iron Works, New York City ... 993
The Gas Machinery Co., Cleveland, O. ... 984
The United Gas Improvement Co., Philadelphia, Pa. ... 999
Western Gas Construction Co., Fort Wayne, Ind. ... 964
William A. Baehr, Chicago, Ills. ... 982

GAS WORKS APPARATUS AND CONSTRUCTION.

Bartlett-Hayward Co., Baltimore, Md. ... 1005
Chamber Oven Co., Milwaukee, Wis. ... 987
Connelly Iron Sponge & Governor Co., New York City. 1001
Continental Iron Works, Brooklyn, N. Y. ... 1002
Cruse-Kemper Co., Philadelphia, Pa. ... 992
Davis & Farnum Mfg. Co., Waltham, Mass. ... 1004
Delly & Fowler Mfg. Co., Philadelphia, Pa. ... 1003
Economical Gas Apparatus Construc. Co., Toronto, Ont. 982
Evens & Howard Firebrick Co., St. Louis, Mo. ... 1000
Gas Engineering Co., Trenton, N. J. ... 986
Humphreys & Glasgow, New York City ... 1004
Improved Equipment Company, New York City ... 986
Isbell-Porter Co., New York City ... 992
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 1005
Laclede-Christy Clay Products Co., St. Louis, Mo. ... 990
Lloyd Construction Co., Detroit, Mich. ... 994
Quintard Iron Works Co., New York City ... 993
R. D. Wood & Co., Philadelphia, Pa. ... 1006
Riter-Conley Mfg. Co., Pittsburgh, Pa. ... 991
Stacey Mfg. Co., Cincinnati, O. ... 1007
The Gas Machinery Co., Cleveland, O. ... 984
The United Gas Improvement Co., Philadelphia, Pa. ... 999
Western Gas Construction Co., Fort Wayne, Ind. ... 964

PROCESSES.

Bartlett-Hayward Co., Baltimore, Md. ... 1005
Chamber Oven Co., Milwaukee, Wis. ... 987
Economical Gas Apparatus Construc. Co., Toronto, Ont. 982
Humphreys & Glasgow, New York City ... 1004
Improved Equipment Company, New York City ... 986
The Gas Machinery Co., Cleveland, O. ... 984
The United Gas Improvement Co., Philadelphia, Pa. ... 999
Western Gas Construction Co., Fort Wayne, Ind. ... 964

SCRUBBERS AND CONDENSERS.

Bartlett-Hayward Co., Baltimore, Md. ... 1005
Continental Iron Works, Brooklyn, N. Y. ... 1002
Cruse-Kemper Co., Philadelphia, Pa. ... 992
Davis & Farnum Mfg. Co., Waltham, Mass. ... 1004
Economical Gas Apparatus Construc. Co. Toronto, Ont. 982
Evens & Howard Firebrick Co., St. Louis, Mo. ... 1000
Isbell-Porter Co., Newark, N. J. ... 992
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 1005
Quintard Iron Works, New York City ... 993
R. D. Wood & Co., Philadelphia, Pa. ... 1006
Riter-Conley Mfg. Co., Pittsburgh, Pa. ... 991
Stacey Mfg. Co., Cincinnati, O. ... 1007
The Gas Machinery Co., Cleveland, O. ... 984
The United Gas Improvement Co., Philadelphia, Pa. ... 999
Western Gas Construction Co., Fort Wayne, Ind. ... 964

PRODUCER POWER PLANTS.

Economical Gas Apparatus Construc. Co., Toronto, Ont. 982
R. D. Wood & Co., Philadelphia, Pa. ... 1006

TAR AND CARBONIC ACID EXTRACTOR.

Bartlett-Hayward Co., Baltimore, Md. ... 1005
Economical Gas Apparatus Construc. Co., Toronto, Ont. 982
Isbell-Porter Co., Newark, N. J. ... 992
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 1005
Stacey Mfg. Co., Cincinnati, O. ... 1007
The Gas Machinery Co., Cleveland, O. ... 984
The United Gas Improvement Co., Philadelphia, Pa. ... 999
Western Gas Construction Co., Fort Wayne, Ind. ... 964

AMMONIA CONCENTRATORS.

Bartlett-Hayward Co., Baltimore, Md. ... 1005
Michigan Ammonia Works, Detroit, Mich. ... 982
The Gas Machinery Co., Cleveland, O. ... 984
Western Gas Construction Co., Fort Wayne, Ind. ... 964

GAS METERS.

American Meter Co., New York and Philadelphia. ... 1011
D. McDonald & Co., Albany, N. Y. ... 1009
Helme & McIlhenny, Philadelphia, Pa. ... 1011
John J. Griffin & Co., Philadelphia, Pa. ... 1012
Keystone Meter Co., Royersford, Pa. ... 1010
Maryland Meter and Mfg. Co., Baltimore, Md. ... 1010
Metric Metal Co., Erie, Pa. ... 1011
Nathaniel Tufts Meter Co., Boston, Mass. ... 1010
New York Improved Meter Co., New York City. ... 1010
Pittsburg Meter Co., East Pittsburg, Pa. ... 994
Rotary Meter Co., New York City ... 983
Sprague Meter Co., Bridgeport, Conn. ... 1009
United States Meter Co., Brooklyn, N. Y. ... 1011

PREPAYMENT METERS.

American Meter Co., New York and Philadelphia. ... 1011
D. McDonald & Co., Albany, N. Y. ... 1009
Helme & McIlhenny, Philadelphia, Pa. ... 1011
John J. Griffin & Co., Philadelphia, Pa. ... 1012
Keystone Meter Co., Boyersford, Pa. ... 1010
Nathaniel Tufts Meter Co., Boston, Mass. ... 1010
New York Improved Meter Co. New York City. ... 1010
Pittsburg Meter Co., East Pittsburg, Pa. ... 994
Sprague Meter Co., Bridgeport, Conn. ... 1009

PREPAYMENT METER ATTACHMENTS.

New York Improved Meter Co., New York City. ... 1010

WATER METERS.

Pittsburg Meter Co., East Pittsburg, Pa. ... 994

GAS AND WATER PIPES.

Davis & Farnum Mfg. Co., Waltham, Mass. ... 1004
Donaldson Iron Co., Emaus, Pa. ... 996
Economical Gas Apparatus Construc. Co., Toronto, Ont. 82
R. D. Wood & Co., Philadelphia, Pa. ... 1006

GAS COALS.

Berwind-White Coal Mining Co., New York and Phila. 1002
Perkins Co., New York City ... 1004
Westmoreland Gas Coal Co., Philadelphia, Pa. ... 1003

GAS MAIN STOPPERS.

Safety Gas Main Stopper Co., New York City ... 1003

MAIN AND SERVICE LAYING.

Sullivan Bros., Flushing, N. Y. ... 1003

GAS TAPPING MACHINES.

George Light, Dayton, O.....1008
H. Mueller Manufacturing Co. Decatur, Ills..... 982

CANNEL COALS.

Perkins & Co., New York City.....1002

STOKING MACHINERY.

G. A. Bronder, New York City.....1001
Laclede-Christy Clay Products Co., St. Louis, Mo..... 990
Parker-Russell Mining and Mfg. Co., St. Louis, Mo..... 989

CONVEYORS—ALL KINDS.

Bartlett-Hayward Co., Baltimore, Md.....1005
Brown Hoisting Machinery Co., Cleveland, O..... 996
Cruse-Kemper Co., Philadelphia, Pa..... 992
C. W. Hunt Company, New York City.....1004
Economical Gas Apparatus Construc. Co., Toronto, Ont. 983
G. A. Bronder, New York City.....1001
Kerr Murray Mfg. Co., Fort Wayne, Ind.....1005
The Gas Machinery Co., Cleveland, O..... 984
Western Gas Construction Co., Fort Wayne, Ind..... 964

CHARGING BARROWS & COAL WAGONS.

Davis & Farnum Mfg. Co., Waltham, Mass.....1004
Kerr Murray Mfg. Co., Fort Wayne, Ind.....1005
Stacey Mfg. Co., Cincinnati, O.....1007

GAS ENRICHERS.

Standard Oil Co., New York City..... 955

COKE CRUSHERS.

Bartlett-Hayward Co., Baltimore, Md.....1005
C. M. Keller, Columbus, Ind.....1003

GAS METER CONNECTIONS.

H. Mueller Manufacturing Co., Decatur, Ills..... 982

GAS COCKS.

H. Mueller Manufacturing Co., Decatur, Ills..... 982

GAS GAUGES.

The Bristol Co., Waterbury, Conn..... 996

GAS GOVERNORS.

Chaplin-Fulton Mfg. Co., Pittsburg, Pa.....1006
Connelly Iron Sponge & Governor Co., New York City .1001
Evens & Howard Firebrick Co., St. Louis, Mo.....1000
Isbell-Porter Co., Newark, N. J..... 992
Pittsburg Meter Co., East Pittsburg, Pa..... 994
R. D. Wood & Co., Philadelphia, Pa.....1003
Reynolds Gas Regulator Co., Anderson, Ind.....1003

CEMENTS.

C. L. Gerould, New Castle, Pa..... 1000
Laclede-Christy Clay Products Co., St. Louis, Mo..... 990

RETORTS AND FIREBRICKS.

Baltimore Retort and Firebrick Co., Baltimore, Md...1000
Chamber Oven Co., Milwaukee, Wis..... 987
Didier-March Co., New York City..... 985
Evens & Howard Firebrick Co., St. Louis, Mo.....1000
Gas Bench Construction Co., St. Louis, Mo..... 993
Henry Maurer & Son, New York City..... 993
Improved Equipment Company, New York City..... 986
James Gardner, Jr., Co., Bolivar, Pa.....1002
J. H. Gautier & Co., Jersey City, N. J.....1000
Laclede-Christy Clay Products Co., St. Louis, Mo..... 990
Missouri Firebrick Co., St. Louis, Mo.....1000
Parker-Russell Mining and Mfg Co., St. Louis, Mo.... 989

INCLINED RETORTS.

Baltimore Retort and Firebrick Co., Baltimore, Md...1000
Didier-March Co., New York City..... 985
Gas Bench Construction Co., St. Louis, Mo..... 993
Improved Equipment Company, New York City..... 986
Laclede-Christy Clay Products Co., St. Louis, Mo..... 990
Parker-Russell Mining and Mfg. Co., St. Louis, Mo... 989

VERTICAL S'S.

Connelly Iron Sponge & Gov. Co. (Drake's [Eng.] System) 1001
Didier-March Co., New York City..... 985
Gas Bench Construction Co., St. Louis, Mo..... 993
Improved Equipment Company, New York City..... 986
Laclede-Christy Clay Products Co., St. Louis, Mo..... 990
Parker-Russell Mining and Mfg. Co., St. Louis, Mo.... 989

REGENERATIVE FURNACES.

Baltimore Retort and Firebrick Co., Baltimore, Md..1000
Bartlett, Hayward & Co., Baltimore, Md.....1005
Didier-March Co., New York City..... 985
Gas Bench Construction Co., St. Louis, Mo..... 993
Improved Equipment Company, New York City..... 986
J. H. Gautier & Co., Jersey City, N. J.....1000
Laclede-Christy Clay Products Co., St. Louis, Mo..... 990
Missouri Firebrick Co., St. Louis, Mo.....1000
Parker-Russell Mining and Mfg. Co., St. Louis, Mo... 989

SELF-SEALING MOUTHPIECE DOORS.

Bartlett-Hayward Co., Baltimore, Md.....1005
Continental Iron Works, Brooklyn, N. Y.....1006
Davis & Farnum Mfg. Co., Waltham, Mass.....1004
Isbell-Porter Co., Newark, N. J..... 992
Improved Equipment Company, New York City..... 986
Kerr Murray Mfg. Co., Fort Wayne, Ind.....1005
Parker-Russell Mining and Mfg. Co., St. Louis, Mo..... 989
Quintard Iron Works, New York City..... 993
R. D. Wood & Co., Philadelphia, Pa.....1006
Stacey Mfg. Co., Cincinnati, O.....1007
The Gas Machinery Co., Cleveland, O..... 984
Western Gas Construction Co., Fort Wayne, Ind..... 964

INCANDESCENT GAS LAMPS.

General Gas Light Co., Kalamazoo, Mich..... 988
Welsbach Company, Gloucester, N. J..... 998

BURNERS.

Wm. M. Crane Co., New York City..... 988

STREET LAMPS.

Thos. T. W. Miner, New York City..... 994
Welsbach Street Lighting Co., New York and Phila.. 998

PURIFIERS.

Bartlett-Hayward & Co., Baltimore, Md.....1005
Connelly Iron Sponge & Governor Co., New York City .1001
Cruse-Kemper Co., Philadelphia, Pa..... 992
Davis & Farnum Mfg. Co., Waltham, Mass.....1004
Isbell-Porter Co., Newark, N. J..... 992
Kerr Murray Mfg. Co., Fort Wayne, Ind.....1005
Quintard Iron Works, New York City..... 993
R. D. Wood & Co., Philadelphia, Pa.....1003
Stacey Mfg. Co., Cincinnati, O.....1007
The United Gas Improvement Co., Philadelphia, Pa... 999
Western Gas Construction Co., Fort Wayne, Ind..... 964

VALVES.

Bartlett-Hayward & Co., Baltimore, Md.....1005
Continental Iron Works, Brookln, N. Y.....1002
Davis & Farnum Mfg. Co., Waltham, Mass.....1004
Economical Gas Apparatus Construc. Co., Toronto, Ont. 932
Isbell-Porter Co., Newark, N. J..... 992
Kerr Murray Mfg. Co., Fort Wayne, Ind.....1005
Ludlow Valve Manufacturing Co., Troy, N. Y..... 1004
R. D. Wood & Co., Philadelphia, Pa.....1006
Stacey Mfg. Co., Cincinnati, O.....1007
The Gas Machinery Co., Cleveland, O..... 984
The P. H. & F. M. Roots Co., Connersville, Ind..... 995
Western Gas Construction Co., Fort Wayne, Ind..... 964

PURIFYING MATERIALS.

Connelly Iron Sponge & Governor Co., New York City 1001
F. Behrend, New York City.....1004
The United Gas Improvement Co., Philadelphia, Pa... 999

EXHAUSTERS.

Connelly Iron Sponge & Governor Co., New York City 1001
Connersville Blower Company, Connersville, Ind.....1008
Davis & Farnum Mfg. Co., Waltham, Mass.....1004
Isbell-Porter Company, Newark, N. J..... 992
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 1005
Piqua Blower Co., Piqua, O..... 993
The P. H. & F. M. Roots Co., Connersville, Ind..... 995

HIGH PRESSURE GAS GOODS.

H. Mueller Manufacturing Co., Decatur, Ills..... 982

(*Continued on page 982.*)

Tenders for Repairs to Concrete Gasholder Tank.

Sealed tenders addressed to H. B. R. Craig, City Engineer, and marked "TENDERS for GASHOLDER," will be received up to 12 o'clock, noon, the 19th day of June next, for the repair of the concrete gasholder tank belonging to the Corporation of the City of Kingston, Canada. Information and general specifications may be obtained upon application to the undersigned. The lowest or any tender not necessarily accepted.

1773-2 (Signed) H. B. R. CRAIG, City Engineer.

Position Wanted

As Superintendent,

By a competent gas man who has had practical experience in all branches of the business, both coal and water gas. At present employed. A-1 references.

1755-tf Address, "R. C.," care this Journal.

Wanted, Position

As Manager or Superintendent,

By a practical man, experienced in manufacture and distribution of coal and water gas. First-class references. Address, "A. A."

1772-2 Care this Journal.

Position Wanted.

On or before May 1st I shall be open for a position as superintendent or manager of a gas or electric property or of a combined property. I am a graduate of a leading technical university and have had 6 years of actual operation in the above lines. I am obliged to look for a position because of a complete change in the management of the companies I am now employed with as assistant to the president. I can refer directly to him as one of my references, and also to several leading gas and electrical engineers as to my ability and character. I am 29 years of age. Address reply to "M.,"

1766-tf Care this Journal.

Position Wanted.

Position wanted by a married man, 30 years of age, who has had 10 years' practical experience in the manufacture, distribution and construction of coal and water gas, high and low pressure. Is a draughtsman, can handle transit and leveling instruments, has some experience in the electric and water business. Party is now engaged as superintendent of gas department, but prior to panic was acting as gas engineer for a well-known engineering concern and prefers such a position, or one with a corporation who are in possession of gas properties that are lacking of satisfactory results.

Address, "DEEKER,"

1772-3 Care this Journal.

MANAGER WANTED.

Wanted at once, experienced, competent, energetic, practical man, to take charge of New Business Department of Gas Company, adjacent New York City. Splendid opening and good salary paid to one who can show results. Address, giving full particulars regarding former employment.

GEORGE MacDONALD,

1770-4 145 Broadway, N. Y. City.

WANTED,

For Western territory, an aggressive and competent traveling salesman for a leading line of gas ranges and heaters. State age and experience.

Address, "MANUFACTURER,"

1767-tf Care this Journal.

WANTED,

A General Accountant and Bookkeeper,

By a Central Western gas company; one who is familiar with all departments of the gas business, and can act as auditor.

Address with references, "MIDDLE,"

1772-2 Care this Journal.

WANTED IN A NEW ENGLAND CITY,

Salesman for Industrial Appliances

Thoroughly familiar with their construction, operation and sale. State experience, references and pay.

1773-1 Address, "T. S.," care this Journal.

WANTED,

Young man who knows the gas appliance business. Competent to manage office detail and correspondence. Good opening for one who can fill the bill. All answers confidential.

Address, "EMPLOYEE,"

1773-2 Care this Journal.

FOR SALE,

One set of 4 purifying boxes 12 feet 8 inches by 10 feet 9 inches by 3 feet, in good condition, with centerseal and 10-inch connections. Also one American 8-foot station meter.

1771-tf YORK GAS CO., York, Pa.

(Concluded from page 981.)

PURIFIER AND SCRUBBER TRAYS.

Bartlett-Hayward Co., Baltimore, Md.....1005
Cabot Mfg. Co., Hoboken, N. J.....1008
Western Gas Construction Co., Fort Wayne, Ind..... 964

PIPE LINE TOOLS.

H. Mueller Manufacturing Co., Decatur, Ills..... 982

GAS PLANT TOOLS.

H. Mueller Manufacturing Co., Decatur, Ills..... 982

GAS STOVES.

American Meter Co., New York and Philadelphia..... 997
Keystone Meter Co., Royersford, Pa.....1010
Maryland Meter & Manufacturing Co., Baltimore, Md...1010
Nathaniel Tufts Meter Co., Boston, Mass.....1010

HOT WATER HEATERS.

Humphrey Co., Kalamazoo, Mich..... 994

GASHOLDERS.

Bartlett-Hayward Co., Baltimore, Md. 1005
Continental Iron Works, Brooklyn, N. Y.....1002
Cruse-Kemper Co., Philadelphia, Pa..... 962
Davis & Farnum Mfg. Co., Waltham, Mass..... 994
Deily & Fowler Mfg. Co., Philadelphia, Pa.....1008
Economical Gas Apparatus Construc. Co., Toronto, Ont. 982
Kerr Murray Mfg. Co., Fort Wayne, Ind.....1005
R. D. Wood & Co., Philadelphia, Pa.....1006
Riter-Conley Mfg. Co., Pittsburgh, Pa..... 991
Stacey Mfg. Co., Cincinnati, O.....1007
Western Gas Construction Co., Fort Wayne, Ind..... 964

STORAGE TANKS.

Bartlett-Hayward Co., Baltimore, Md.....1005
Davis & Farnum Mfg. Co., Waltham, Mass.....1004
Quintard Iron Works, New York City..... 963
Stacey Mfg. Co., Cincinnati, O.....1007
Western Gas Construction Co., Fort Wayne, Ind..... 964

PATENTS, TRADE-MARKS, COPYRIGHTS.

Royal E. Burnham, Washington, D. C.....1003

Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 100 in use. Write to

STROH & OSIUS, Patentees, or

MICHIGAN AMMONIA WORKS, - Detroit, Mich.

WILLIAM A. BAEHR,

CONSULTING ENGINEER,

Commercial National Bank Building,

CHICAGO,

Representing The Bartlett-Hayward Co.

THE ECONOMICAL GAS APPARATUS CONSTRUCTION COMPANY, LIMITED,

Consulting Engineers.

Builders of UP-TO-DATE Machinery and Appliances for Coal and Water Gas Plants. :: :: :: :: ::

PLANS, SPECIFICATIONS AND ESTIMATES PREPARED.

AMERICAN OFFICE:

269 Front St., East, Toronto, Canada.

Gas Engineer's Pocket-book, BY HENRY O'CONNOR,

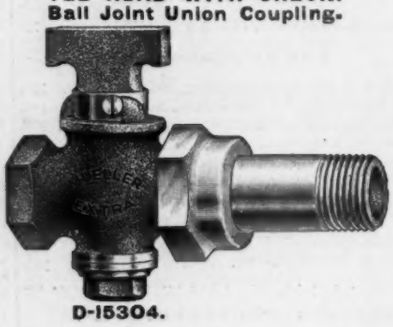
Comprising Tables, Notes and Memoranda relating to the Manufacture, Distribution and Use of Coal Gas, and the Construction of Gas Works. PRICE, $3.50. For Sale by AMERICAN GAS LIGHT JOURNAL, - 42 Pine St. N. Y. City.

Mueller Extra Gas Stove Cocks.

The same thing that makes a good door lock makes a good gas cock--a key that fits perfectly and works easily.

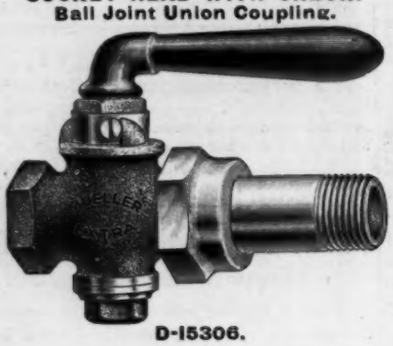
In Mueller Extra Gas Stove Cocks the keys are carefully machine ground and polished into the bodies. They fit perfectly and a special composition keeps them in condition for easy turning.

TEE HEAD WITH CHECK.
Ball Joint Union Coupling.



D-15304.

SOCKET HEAD WITH CHECK.
Ball Joint Union Coupling.



D-15306.

Mueller Extra Gas Stove Cocks are made in flat, tee and socket head, with or without check. They are cast from red brass, have evenly balanced walls and strong hexes.

Unconditionally Guaranteed.

TRADE MARK
MUELLER
REGISTERED

H. MUELLER MFG. CO.

Eastern Division,
NEW YORK, N. Y., U. S. A.
254 Canal St. (cor. Lafayette).

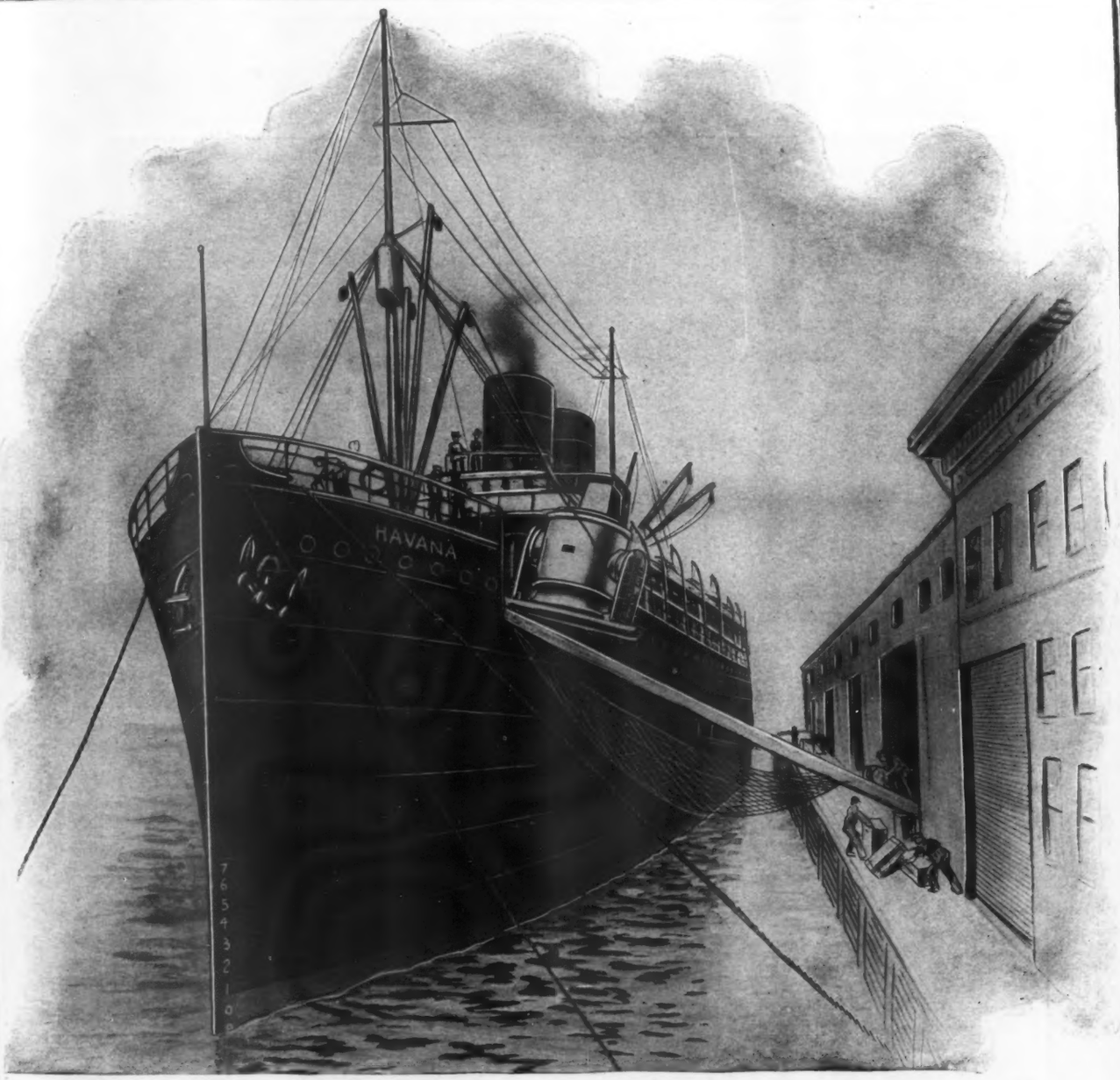
Works and General Offices,
DECATUR, ILL., U. S. A
West Cerro Gordo Street.

Chicago Branch,
CHICAGO, ILL., U. S. A.
37 Dearborn St.

Newbigging's Handbook for Gas Engineers and Managers.

PRICE, $6.50.

AMERICAN GAS LIGHT JOURNAL, - 42 Pine Street, New York City.



Scene on Ward S. S. Line Pier, New York, when a 250,000 cu. ft. per hour

ROTARY STATION METER

was loaded on board S. S. Havana for delivery to **Compania de Gaz y Electricidad, Habana, Cuba.** We can ship by water and rail—freight or express—it's all the same to us so long as the customer gets the goods.

It is time to stop "guessing"—some dignify it by calling it "estimating"—the results obtained in a gas works. Put in a Rotary Station Meter and know what is doing. Rotary Meters are annually saving their cost in scores of gas works.

ROTARY METER COMPANY

Rotary Station Meters can be supplied for any capacity between 1,500 cu. ft. per hour and 250,000, or more, cu. ft. per hour.

One-half the Cost—One-tenth the Space of Old Style Wet Meters.

When in need of Station Meters write

ROTARY METER COMPANY

Send for Catalog. **280 Broadway, NEW YORK.**

P. PLANTINGA, President W. E. STEINWEDELL, Secretary

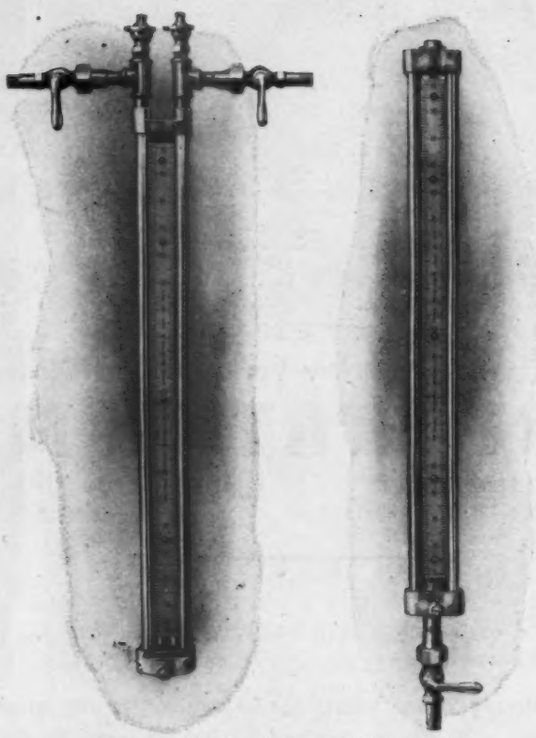
THE GAS MACHINERY CO.,

Main Office and Shops

CLEVELAND, OHIO.

NEW YORK OFFICE, . . . 56 PINE STREET.

COAL AND WATER GAS APPARATUS,
EXHAUSTERS, CONDENSERS, SCRUBBERS,
TAR EXTRACTORS, WASHERS, PURIFIERS,
VALVES, CONNECTIONS,
BY PRODUCT MACHINERY;
COMPLETE GAS PLANTS.



DIFFERENTIAL AND OPEN PRESSURE GAUGES.

THE GAS MACHINERY CO.
CLEVELAND, OHIO.

DIDIER-MARCH COMPANY,

Hudson Terminal Building,

WORKS:
Keasbey, Perth Amboy, N. J.

50 Church Street,
NEW YORK, N. Y.

DESSAU SYSTEM OF VERTICAL RETORTS,

"The Only System in Successful Operation."

U. S. Patent No. 904043.
"Process Patent for the Carbonization of Coal in Vertical Retorts."

U. S. Patent No. 801268.
"Operating Mechanism for Bottom Mouthpieces."

U. S. Patent No. 906187.
"Feeding Device."

U. S. Patent No. 899503.
"Retort House."

U. S. Patent No. 915156.
"Recuperation."

388 Benches, with 3984 Retorts in operation and under construction.

TOTAL DAILY PRODUCING CAPACITY, 60,000,000 CUBIC FEET.

First Installation in the United States of America,

PROVIDENCE, R. I., 12 BENCHES, 120 RETORTS,

Complete, with

Retort House, Coal and Coke Handling Machinery and Storage Bins.

HORIZONTALS AND INCLINES OF APPROVED TYPES.

Correspondence Solicited. **FREDERICK J. MAYER, General Manager.**

WE STOP CLINKERS.

Send for Bulletin.

THREE BENCHES UNDER CONSTRUCTION, EQUIPPED WITH THE ECONOMIZER.

20 TO 50 PER CENT. LESS FUEL GUARANTEED
LONGER LIFE OF BENCHES - - - GUARANTEED
ABSOLUTELY NO CLINKERS - - - GUARANTEED
INCREASED CARBONIZING CAPACITY GUARANTEED
} UNDER PENALTY.

THE IMPROVED EQUIPMENT COMPANY,

GAS WORKS—GAS BENCHES.

MAIN OFFICES: 60 WALL STREET, NEW YORK, N. Y.

SOLE LICENSEES FOR THE DOHERTY BENCH FUEL ECONOMIZER.

LONG DISTANCE TELEPHONE, 1503-D.

FRANK D. MOSES, President.

GAS ENGINEERING CO.,

MANUFACTURERS AND ERECTORS OF

COMPLETE GAS WORKS.

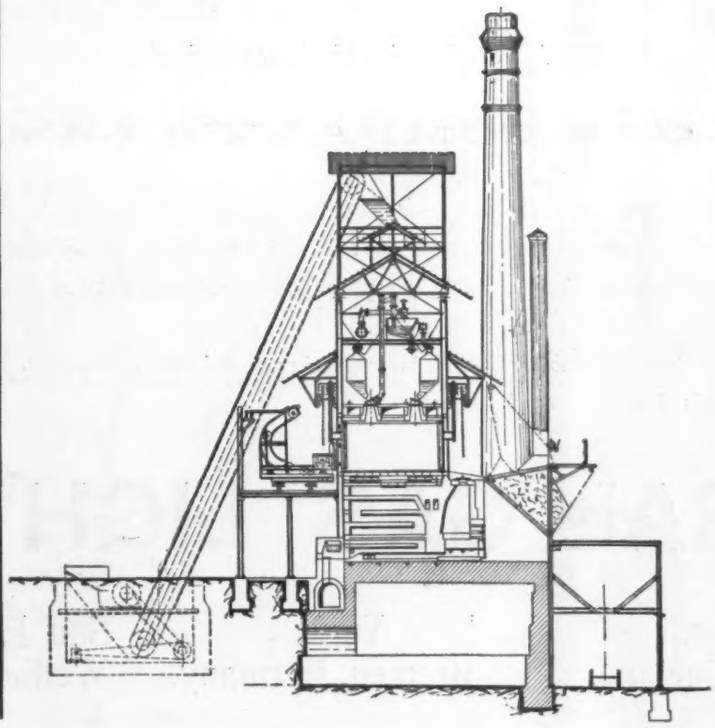
SPECIAL ATTENTION GIVEN TO LARGE PURIFIERS.

OFFICE AND WORKS, - - - - - - TRENTON, N. J.

CHAMBER OVENS.

Do You Know About Chamber Ovens?

Horizontal, Vertical, or Inclined.



If your output is over 250,000 feet per diem don't fail to consult

THE CHAMBER OVEN CO.,

405 Keene St.,

MILWAUKEE, WIS.

FRED. BREDEL, President.

WM. H. CAMPBELL, Eastern Agent,

Virginia State Insurance Building, Richmond, Va.

PRACTICAL HANDBOOK ON

GAS ENGINES,

With Instructions for Care and Working of the Same,

By G. LIECKFELD, C.E.

Translated with Permission of the Author, GEO. M. RICHMOND, M.E.

PRICE, $1.00.

A. M. CALLENDER & CO., No. 42 Pine Street, New York City.

JUST PUBLISHED,

CHEMISTRY OF GAS MANUFACTURE,

By HAROLD M. ROYLE, F.C.S.,

Chief Chemical Assistant at the Beckton Gas Works.

A PRACTICAL MANUAL FOR GAS ENGINEERS, GAS MANAGERS AND STUDENTS.

316 PAGES, 82 ENGRAVINGS AND COLORED PLATES.

Chapter I. Preparation of Standard Solutions. II. Coal. III. Furnaces, Testing and Regulation. IV. Products of Carbonization. V. Analysis of Crude Coal Gas. VI. Analysis of Lime. VII. Ammonia. VIII. Analysis of Oxide of Iron. IX. Naphthaline. X. Analyses of Firebricks and Fireclay. XI. Photometry and Gas Testing. XII. Carburetted Water Gas. Appendix A. Metropolis Gas. B. Miscellaneous Extracts. C. Useful Tables, etc.

Price, $4.50. For Sale by

A. M. CALLENDER & CO., 42 PINE ST., NEW YORK CITY.

THE HUMPHREY GAS ARC LAMP,

Designed, Developed and Distinguished as

"THE GAS COMPANY'S LAMP,"

Has been one of the most conspicuous successes of the past decade in lighting lines. The competing lamps that were brought out in scores during the earlier days had but a brief life and exist to-day principally as unpleasant memories of ill-considered purchases. **Is not the same thing about to be repeated with Inverted Gas Arc Lamps?**

Adopt the **Humphrey Inverted** as your standard and be insured and protected by the strongest, most liberal and progressive gas lighting organization in the world.

GENERAL GAS LIGHT CO.,

Kalamazoo. **New York.** **San Francisco.**
London, England. **Bremen, Germany.** **Wellington, New Zealand.**

IT IS ABSOLUTELY NECESSARY

that people be reminded continually that you are ready to sell them the things they want. This is a big world, with lots of people in it, and you are easily forgotten if you don't keep buyers posted. What you should do is to tell them about your product to-day, remind them to-morrow, and keep on reminding them thereafter. If you do this, when the buyer is ready to place his order he will remember you. :: :: :: :: :: :: :: :: :: ::

An Advertisement in the AMERICAN GAS LIGHT JOURNAL

is the best and surest means of keeping your name and product before the buyers. :: ::

THE PARKER-RUSSELL MINING AND MFG. CO.,

Saint Louis, Missouri. **New York Office, 45 Broadway.**

RETORT BENCHES OF EVERY DESCRIPTION, WATER GAS LININGS, STOKING MACHINERY, RETORT HOUSES, CONVEYING MACHINERY.

Sole Agents for the United States and Canada for the FIDDES-ALDRIDGE SIMULTANEOUS DISCHARGING-CHARGER, the F. A. or One-Stroke Machine.

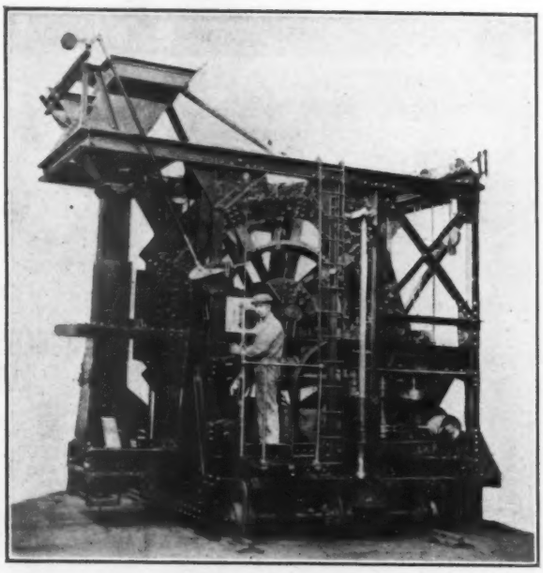
Cost of carbonizing reduced to a minimum.

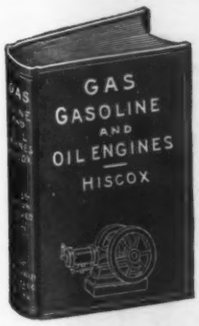
No dust. Silent. No waste of coal. No injury to retorts.

WE MANUFACTURE OUR OWN RETORTS AND SETTINGS.

Correspondence Solicited.

All Contracts Made as of Saint Louis.





JUST PUBLISHED, 15TH EDITION, REVISED, ENLARGED AND RESET.

Gas, Gasoline and Oil Engines,

INCLUDING GAS PRODUCER PLANTS,

By GARDNER D. HISCOX, M.E.

Author of "MECHANICAL MOVEMENTS," "COMPRESSED AIR," Etc.

PRICE, - - - - - $2.50.

The only complete American book on the subject for Gas Engine Owners, Gas Engineers and intending purchasers of gas engines, treating fully on the construction, installation, operation and maintenance of gas, gasoline, kerosene and crude petroleum engines.

The new rewritten, enlarged and revised 15th edition of this work has been prepared to meet the increasing demand for a thorough treatise on the subject. Its 450 pages give general information for everyone interested in this popular motive power and its adaptation to the increasing demand for a cheap and easily managed motor requiring no licensed engineer. It is fully illustrated by 351 Engravings and Diagrams. For sale by

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.

Gas Companies' Bookkeeping,

1906 EDITION,

By JOHN H. BREARLEY and BENJAMIN TAYLOR.

A Practical Treatise on the Keeping of Gas Companies' Accounts,

WITH USEFUL

FORMS FOR GAS UNDERTAKINGS.

PRICE, CLOTH, $4.50, MOROCCO, $6.50.

FOR SALE BY

A. M. CALLENDER & CO., - - - 42 Pine Street, New York City.

THE HUMPHREY GAS ARC LAMP,

Designed, Developed and Distinguished as

"THE GAS COMPANY'S LAMP,"

Has been one of the most conspicuous successes of the past decade in lighting lines. The competing lamps that were brought out in scores during the earlier days had but a brief life and exist to-day principally as unpleasant memories of ill-considered purchases. **Is not the same thing about to be repeated with Inverted Gas Arc Lamps?**

Adopt the **Humphrey Inverted** as your standard and be insured and protected by the strongest, most liberal and progressive gas lighting organization in the world.

GENERAL GAS LIGHT CO.,

Kalamazoo. **New York.** **San Francisco.**
London, England. **Bremen, Germany.** **Wellington, New Zealand.**

IT IS ABSOLUTELY NECESSARY

that people be reminded continually that you are ready to sell them the things they want. This is a big world, with lots of people in it, and you are easily forgotten if you don't keep buyers posted. What you should do is to tell them about your product to-day, remind them to-morrow, and keep on reminding them thereafter. If you do this, when the buyer is ready to place his order he will remember you. :: :: :: :: :: :: :: :: :: ::

An Advertisement in the AMERICAN GAS LIGHT JOURNAL

is the best and surest means of keeping your name and product before the buyers. :: ::

THE PARKER-RUSSELL MINING AND MFG. CO.,

Saint Louis, Missouri. **New York Office, 45 Broadway.**

RETORT BENCHES OF EVERY DESCRIPTION, WATER GAS LININGS, STOKING MACHINERY, RETORT HOUSES, CONVEYING MACHINERY.

Sole Agents for the United States and Canada for the FIDDES-ALDRIDGE SIMULTANEOUS DISCHARGING-CHARGER, the F. A. or One-Stroke Machine.

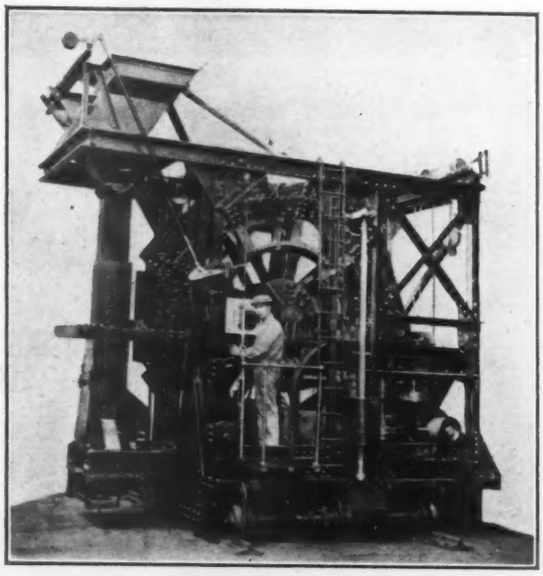
Cost of carbonizing reduced to a minimum.

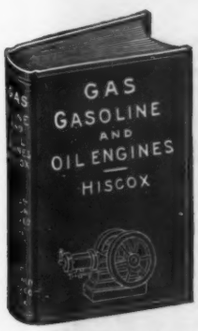
No dust. Silent. No waste of coal. No injury to retorts.

WE MANUFACTURE OUR OWN RETORTS AND SETTINGS.

Correspondence Solicited.

All Contracts Made as of Saint Louis.





JUST PUBLISHED, 15TH EDITION, REVISED, ENLARGED AND RESET.

Gas, Gasoline and Oil Engines,

INCLUDING GAS PRODUCER PLANTS,

By GARDNER D. HISCOX, M.E.

Author of "MECHANICAL MOVEMENTS," "COMPRESSED AIR," Etc.

PRICE, - - - - - $2.50.

The only complete American book on the subject for Gas Engine Owners, Gas Engineers and intending purchasers of gas engines, treating fully on the construction, installation, operation and maintenance of gas, gasoline, kerosene and crude petroleum engines.

The new rewritten, enlarged and revised 15th edition of this work has been prepared to meet the increasing demand for a thorough treatise on the subject. Its 450 pages give general information for everyone interested in this popular motive power and its adaptation to the increasing demand for a cheap and easily managed motor requiring no licensed engineer. It is fully illustrated by 351 Engravings and Diagrams. For sale by

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.

Gas Companies' Bookkeeping,

1906 EDITION,

By JOHN H. BREARLEY and BENJAMIN TAYLOR.

A Practical Treatise on the Keeping of Gas Companies' Accounts,

WITH USEFUL

FORMS FOR GAS UNDERTAKINGS.

PRICE, CLOTH, $4.50, MOROCCO, $6.50.

FOR SALE BY

A. M. CALLENDER & CO., - - - 42 Pine Street, New York City.

GAS BENCHES,

FIRE BRICK AND WATER GAS LININGS.

LATEST DESIGNS,
HIGHEST GRADE MATERIAL,
SUPERIOR WORKMANSHIP,
UNEQUALED RESULTS.

DESIGNS AND SPECIFICATIONS FURNISHED ON THE HORIZONTAL, INCLINED OR VERTICAL RETORT SYSTEMS FOR COMPLETE GAS WORKS.

LACLEDE-CHRISTY CLAY PRODUCTS CO.,

ST. LOUIS, MO.

SCIENTIFIC BOOKS.

GAS MANUFACTURE. By W. J. A. Butterfield. Vol. I., Material and Processes. $2.50. Vol. II., In Preparation

MODERN GAS ENGINES AND PRODUCER GAS PLANTS. By R. E. Mathot. $2.50.

COAL TAR AND AMMONIA. By George Lunge. $15.

GAS ANALYSIS. By Dr. W. H. Birchmore. $1.25.

ELECTRIC GAS LIGHTING. By H. S. Norrie. 50 cents.

GAS ANALYST'S MANUAL. By J. Abady. $6.50.

GAS ENGINE DESIGN. By C. Edward Lucke, Ph.D. $3.

THE "GAS WORLD" YEAR BOOK, 1908. Edited by John Douglas. $3.

GAS AND GAS WORKS. By Hughes and O'Connor. $2.50

POOLE ON FUELS. By Herman Poole. $2.

GAS ENGINEER'S POCKET-BOOK. By Henry O'Connor $3.50.

PRACTICAL TREATISE ON HEAT. By Thomas Box. 2d edition. $5.

CHEMICAL TECHNOLOGY: Vol. I., *Fuel and Its Applications*, $5. Vol. II., *Lighting*, $4.

IRONWORK: Practical Designing of Structural Ironwork. By H. Adams. $3.50.

SELF-INSTRUCTION FOR STUDENTS IN GAS MANUFACTURE. Elementary, advanced and constructional, each, $1.50.

LIQUID FUEL FOR MECHANICAL AND INDUSTRIAL PURPOSES. By E. A. Brayley Hodgetts. $2.50.

GAS ENGINE. By F. R. Hutton, E.M., Ph.D., Sc.D. $5.

TECHNICAL GAS ANALYSIS. By Winkler & Lunge. $4.

CHEMISTRY OF GAS MANUFACTURE. By Harold M. Royle, F.C.S. $4.50.

HEMPEL'S GAS ANALYSIS. $2.25.

HANDBOOK FOR GAS ENGINEERS AND MANAGERS. Seventh edition. By Thomas Newbigging $6.50.

GAS, GASOLINE AND OIL ENGINES. By Gardner D. Hiscox. Fifteenth edition. $2.50.

PRACTICAL HANDBOOK ON GAS ENGINES. By G. Lieckfeld. $1.

HEAT A MODE OF MOTION. By John Tyndall. $2.50.

THEORY OF HEAT. By J. Clerk-Maxwell. $1.50.

AMMONIA AND AMMONIUM COMPOUNDS. By Dr. R. Arnold. $2.

GASFITTERS' QUESTION BOOK, WITH ANSWERS. By Albert Dunbar, S.B. $1.00.

A TREATISE ON THE COMPARATIVE COMMERCIAL VALUES OF GAS COALS AND CANNELS. By D. A. Graham. $1.50.

A TEXT BOOK OF INORGANIC CHEMISTRY. By Prof. Victor Von Richter. $2.

ILLUMINATING AND HEATING GAS. By W. Burns. $1.50

HANDBOOK FOR MECHANICAL ENGINEERS. By H. Adams. $2.50.

FINANCES OF GAS, ELECTRIC LIGHT AND POWER ENTERPRISES. By Wm. D. Marks. $4.

THE "GAS WORLD" ANALYSES OF ACCOUNTS OF GAS UNDERTAKINGS FOR 1906-1907. $4.

STANDARD REDUCTION FACTORS FOR GASES. By Helon Brooks MacFarland. $1.50.

PRACTICAL PLUMBING. By P. J. Davies. Vol. I., $3. Vol. II., $4.50.

AMERICAN SANITARY PLUMBING. By James J. Lawler. $2.

HENLEY'S 20TH CENTURY BOOK OF RECIPES, FORMULAS AND PROCESSES. By Gardner D. Hiscox. $3.

FIELD'S ANALYSIS, 1907. $5.

TREATISE ON MASONRY CONSTRUCTION. Baker. $5.

AMERICAN GAS ENGINEERING PRACTICE. By M Nisbet Latta. $4.50.

A COMPARISON BETWEEN THE ENGLISH AND FRENCH METHODS OF ASCERTAINING THE ILLUMINATING POWER OF COAL GAS. $1.50.

JONES JET PHOTOMETER, for Coal or Water Gas. Each $10.

ELECTRICITY.

ELECTRIC WIRING DIAGRAMS AND SWITCHBOARDS. By Newton Harrison, E.E. $1.50.

CARE AND MANAGEMENT OF ELECTRIC POWER PLANTS. By Norman H. Schneider. Cloth, $1.50. Leather, $2.50.

INDUSTRIAL PHOTOMETRY, with Special Application of Electric Lighting. By A. Palaz, Sc.D. $4.

ELEMENTS OF ELECTRIC LIGHTING, Including Electric Generation, Measurement, Storage and Distribution. By Philip Atkinson. $1.50.

ELECTRIC TRANSMISSION OF ENERGY. By G. Kapp. $3.50.

ELECTRICIAN'S POCKET-BOOK. By Monroe and Jamieson. $2.50.

DYNAMO BUILDING. By F. W. Walker. 50 cents.

DOMESTIC ELECTRICITY FOR AMATEURS. By E. Hospitalier. $2.50.

PRACTICAL MANAGEMENT OF DYNAMOS AND MOTORS. $1.

PRACTICAL GUIDE TO THE TESTING OF INSULATED WIRES AND CABLES. $1.

ELECTRIC LIGHTING, by Francis B. Crocker. $3.

ELECTRIC LIGHT FITTING. $2.

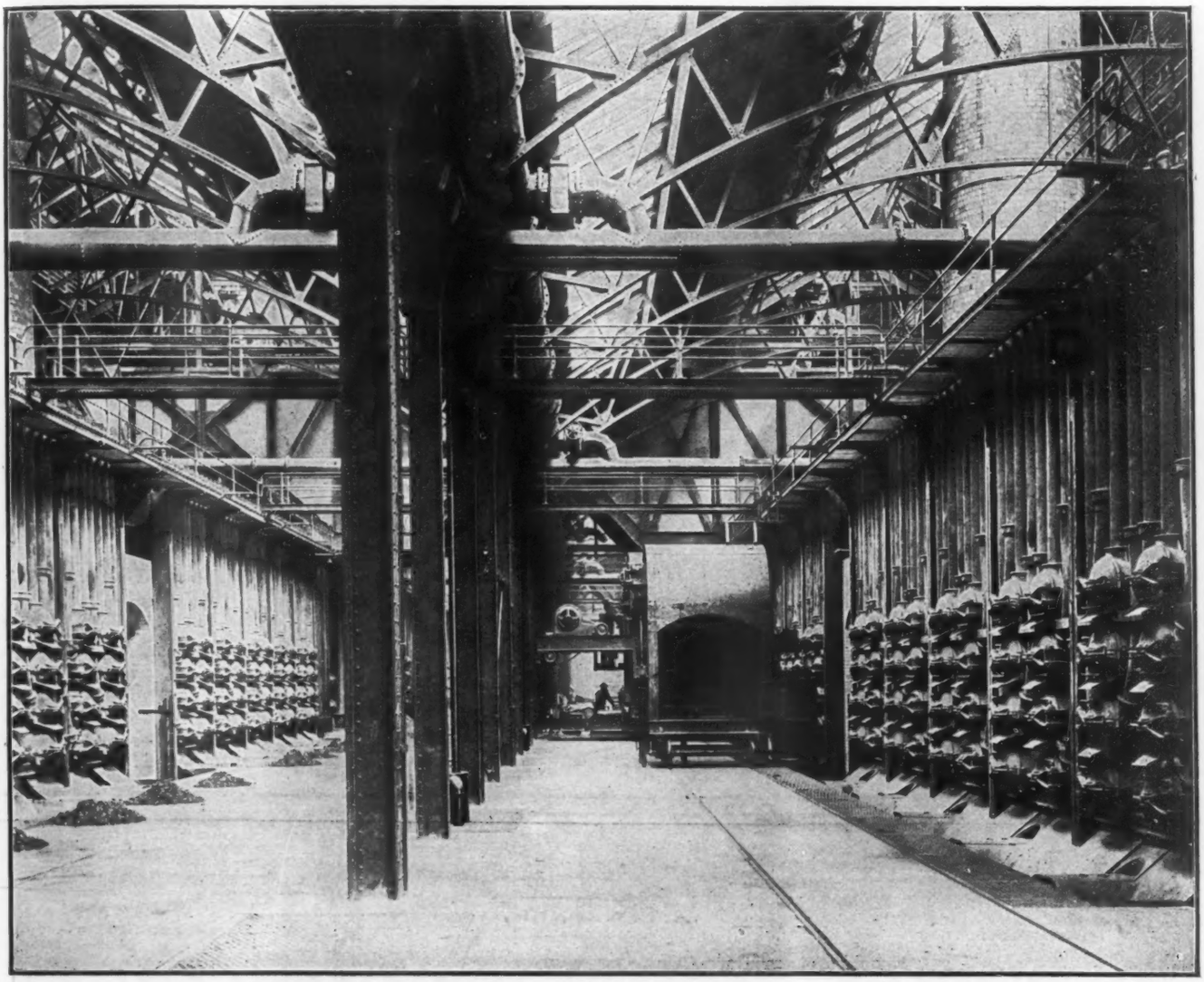
PRACTICAL ELECTRICITY. $2.50.

ELECTRICITY FOR ENGINEERS. $2.50.

ELECTRICITY, Its Theory, Sources and Applications. By John T. Sprague. $6.

The above will be forwarded upon receipt of price. If sent by mail or express, postage or express charges must be added to above prices. We take especial pains in securing and forwarding any other Works that may be desired, upon receipt of order. All remittances should be made by check, draft, or post office money order. No books sent C.O.D.

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.



Eleven Millions Capacity in One Retort House.

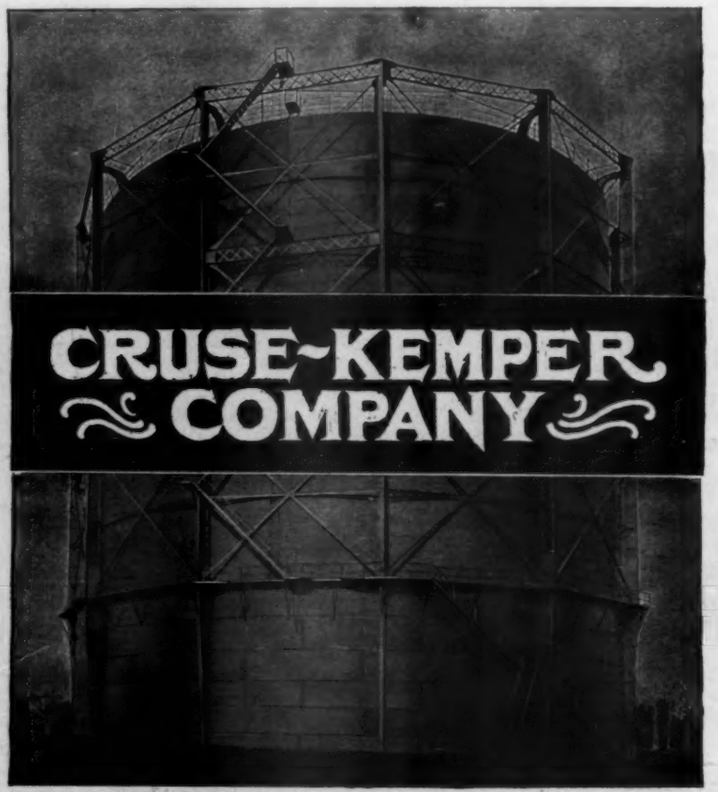
RITER-CONLEY MFG. COMPANY,

PITTSBURGH.

PLATE AND STRUCTURAL WORK OF EVERY DESCRIPTION.

COMPLETE COAL GAS PLANTS.

GAS ENGINEERS,
BUILDERS OF
GAS HOLDERS,
PURIFIER BOXES,
CONDENSERS,
SCRUBBERS,
STEEL TANKS,
PLATE METAL CONSTRUCTION.



CRUSE-KEMPER COMPANY

STEEL WATER AND TRANSMISSION TOWERS.
STEEL BUILDINGS and ROOF TRUSSES.
STRUCTURAL IRON & STEEL WORK IN GENERAL.

OFFICE AND WORKS, - - - - AMBLER, PA.

J. S. DeHART, JR., PRESIDENT
A. F. WEHNER, SECRETARY
R. K. WEHNER, TREASURER

ISBELL-PORTER COMPANY

GAS ENGINEERS & BUILDERS OF GAS WORKS

BENCH WORK
CHARGING AND DISCHARGING MACHINERY
MACKENZIE EXHAUSTERS
PRIMARY AND SECONDARY CONDENSERS FOR FRESH OR SALT WATER

ISBELL VALVES SPECIALS
TAR EXTRACTORS
P. & A. TAR EXTRACTORS FOR WATER GAS
ROTARY AMMONIA SCRUBBERS
SHAVING SCRUBBERS PURIFIERS STREET GOVERNORS

MAIN OFFICE AND WORKS
BRIDGE & OGDEN STREETS
NEWARK, N. J.
ESTABLISHED 1865

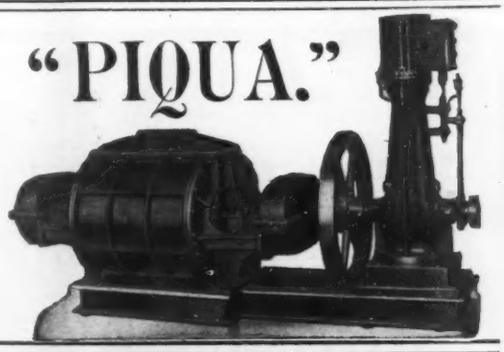
GAS EXHAUSTERS AND BLOWERS.

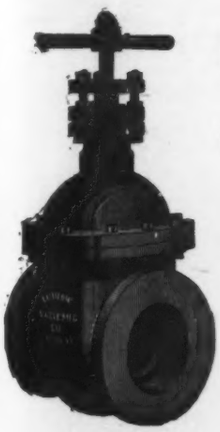
We have a full line of sizes for all standard pressures. The design, material and workmanship is A-1. Prompt Delivery and Reasonable Prices. WHY NOT give us YOUR requirements?

THE PIQUA BLOWER CO.,

PIQUA, OHIO.

"PIQUA."





THE

Ludlow Valve Mfg. Co.,

TROY, N. Y., U. S. A.

Double and Single Gate Valves, ¼" to 72",

—FOR—

Gas, Water, Steam, Oil, Ammonia, Etc.

HOT GAS VALVES A SPECIALTY.

Send for Catalogue.

QUINTARD IRON WORKS CO.,

Foot of Twelfth Street and East River, New York,

BENCH WORK,
CONDENSERS,
SHAVING SCRUBBERS,
CAST IRON FLANGED PIPE,
RIVETED STEEL PIPE.

FREDERICK W FLOYD, Engineer.

ESTABLISHED 1856.

HENRY MAURER & SON,

Manufacturers of

High Grade Firebrick, Blocks, Tiles,

ETC.,

Works: Maurer, N. J. Office: 420 E. 23d St., N. Y. City.

L. C. HAMLINK, PRES. AUGUST COURT, SEC'Y.

GAS BENCH CONSTRUCTION COMPANY,

METROPOLITAN BUILDING, ST. LOUIS, MO.,

Engineers and Builders of all styles of Standard and Special Benches from one to twelve Retorts, Horizontal, Vertical, or Inclined.

We will guarantee "Better Benches," to be easier to control, make more gas per retort, and operate with less fuel than any bench on the market.

ALL WORKMANSHIP AND MATERIAL GUARANTEED.

PRACTICAL HANDBOOK ON GAS ENGINES. WITH INSTRUCTIONS FOR CARE AND WORKING OF THE SAME.

By G. LIECKFELD, C.E. Translated with Permission of the Author, by GEORGE M. RICHMOND, M.E. Price, $1.

For Sale by A. M. CALLENDER & CO., 42 Pine St., New York City.

"IRONCLAD" DRY GAS METERS

Are equally suitable for the measurement of either Artificial or Natural Gas.

CATALOGUE 100 FREE

Pittsburg Meter Company

New York, 149 Broadway.
Chicago, 256 Madison St.
Kansas City, 6 West 10th St.
Minneapolis, 409-411 2d Av., S.

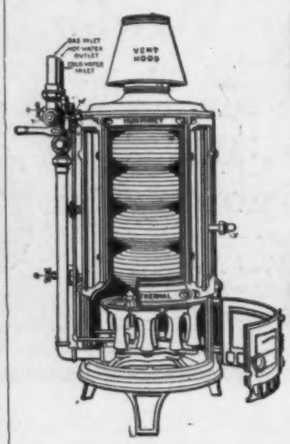
General Office and Works, East Pittsburg, Pa.

Manufacturers of Gas Meters and Water Meters

LLOYD CONSTRUCTION COMPANY

GAS APPARATUS.

DETROIT—MICHIGAN



Humphrey Auto-Thermal Instantaneous Water Heaters

Have every known desirable feature helping to efficiency, economy, durability and absolute safety.

FULLY GUARANTEED.
PRICES LOW.
QUALITY AND SERVICE HIGH.

Will you help us sell them?

HUMPHREY CO.,
Kalamazoo Mich., U. S. A.

"THE MINER"
GLOBE STREET LAMPS.

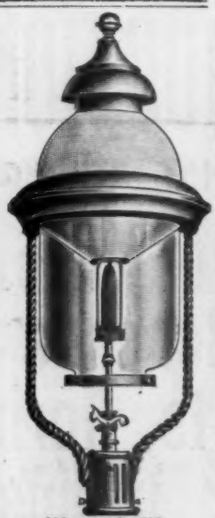
OVER FORTY YEARS IN USE THE WORLD OVER.

THE BEST STREET LAMPS for ALL KINDS OF GAS OR BURNERS.

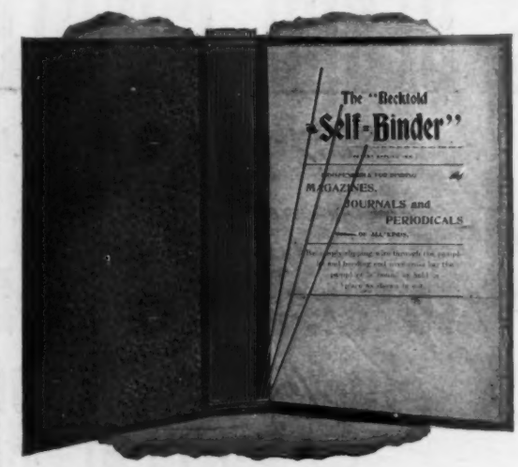
This is only one of a Large Variety of Styles.

SEND FOR CATALOGUE.

THOS. T. W. MINER,
821 and 823 Eagle Avenue, New York.



NO. 100 LAMP.



Binder FOR THE **Journal.** PRICE, **$1.**

For Sale by
A. M. CALLENDER & CO.,
42 Pine Street, New York City.

THE SEVENTH EDITION, ILLUSTRATED,

—OF THE—

Handbook for Gas Engineers and Managers,

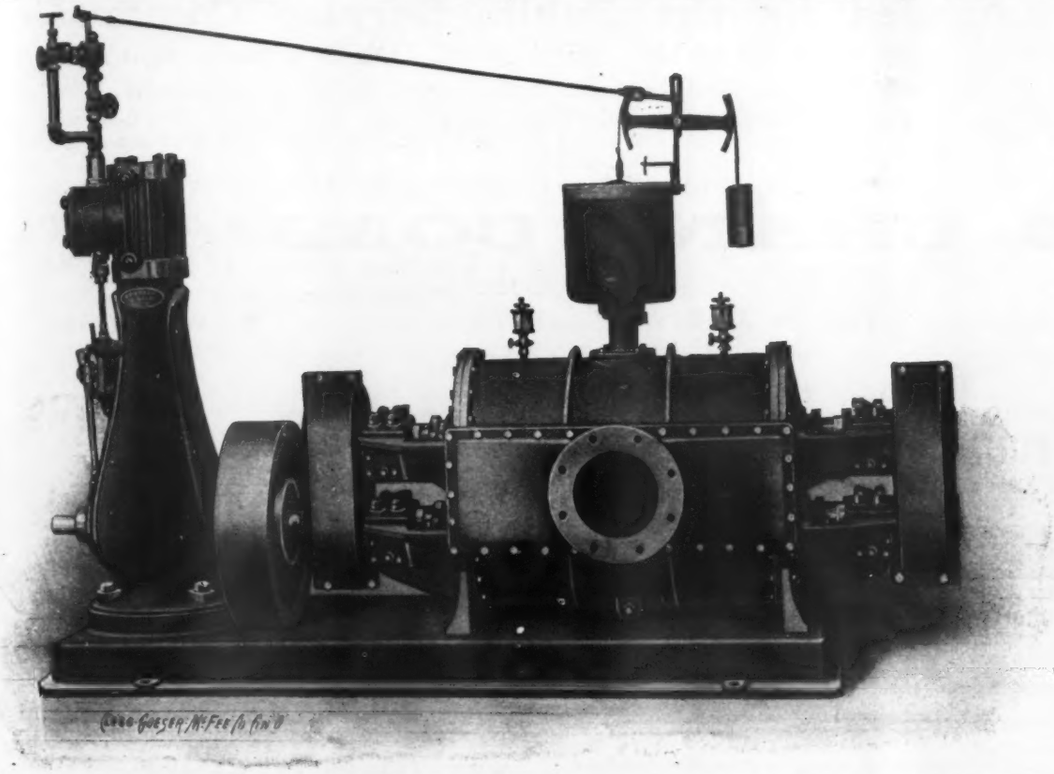
By THOMAS NEWBIGGING, M. INST. C.E.

This Edition of the "Handbook for Gas Engineers and Managers" is a great improvement on all previous editions. Much of the text has been re-written, in order to keep the work abreast of the constant advances that are being made in the Gas Industry.

PRICE, · $6.50.

A. M. CALLENDER & CO., 42 Pine Street, New York City.

50TH ANNIVERSARY.
ROOTS' GAS EXHAUSTERS.



Sizes for any required capacity.

Self-oiling, adjustable bronze bearings.

Most perfect and sensitive Governor.

Write for Catalogue.

P. H. & F. M. ROOTS COMPANY,

HOME OFFICE:
Connersville, Ind.

NEW YORK OFFICE:
120-122 Liberty St.

CHICAGO OFFICE:
1547 Marquette Bldg.

SEND FOR POCKET EDITION OF "ENGINEERS' PRACTICAL REFERENCE BOOK."

The "Gas World" Analyses of Accounts of Gas Undertakings,
For 1906-1907,

Showing at a glance the Accounts of 113 Coal and Water Gas Companies, Itemized under

Coal Carbonized, Gas Made and Sold, Yield of Residuals, Public Lamps, Mileage of Mains, Consumers, Price of Gas, Illuminating Power, Financial Results, Revenue.

Manufacturing Charges, Rates and Taxes, Distribution Charges, Management Charges, Bad Debts, Capital Paid Up, Capital per Ton and per Thousand, Reserve Funds, etc.

EVERY GAS ENGINEER AND MANAGER SHOULD HAVE A COPY OF THIS INVALUABLE AND UP-TO-DATE WORK.

Price, $4. For Sale by

A. M. CALLENDER & CO., 42 PINE ST., NEW YORK CITY.

Gas Analyst's Manual,

By JAQUES ABADY, M. Inst. Mech. E.

(Incorporating F. W. Hartley's "Gas Analyst's Manual" and "Gas Measurement.")

Ninety-three Illustrations and Nine Folding Plates.
Bound in Handsome Half Leather. Price, - $6.50.

FOR SALE BY

A. M. CALLENDER & CO., - - 42 Pine Street, New York City.

BRAY UNION JETS

Recommended by the Public Service Commission.

The following appeared in THE NEW YORK TIMES January 24, 1909:

"The Public Service Commission for the Second District, in its second annual report, call attention to the following:

"**Metal Tips should never be placed on burners, as they waste gas.** The conclusion is reached from a study of all the various factors which enter into the ideal burner and after an examination of the comparative merits that the BRAY UNION JET IS SUPERIOR FOR GENERAL USES."

"THE CONSOLIDATED GAS CO., OF NEW YORK, **Gave 329,397 Bray Burners to their consumers in 1908.**"

W. M. CRANE COMPANY,

SOLE AGENTS.

New Address: 16, 18 & 20 West 32d Street, New York.

GEORGE ORMROD Pres. & Treas. JOHN D. ORMROD, Supt.
J. G. EBERLEIN, Secretary.

EMAUS PIPE FOUNDRY.

DONALDSON IRON COMPANY. EMAUS, PA.

MANUFACTURERS OF

CAST IRON PIPE AND SPECIAL CASTINGS

FOR WATER AND GAS.

Also, FLANGE PIPE, LAMP POSTS, Etc.

BRISTOL'S

REG. U. S. PAT. OFFICE.

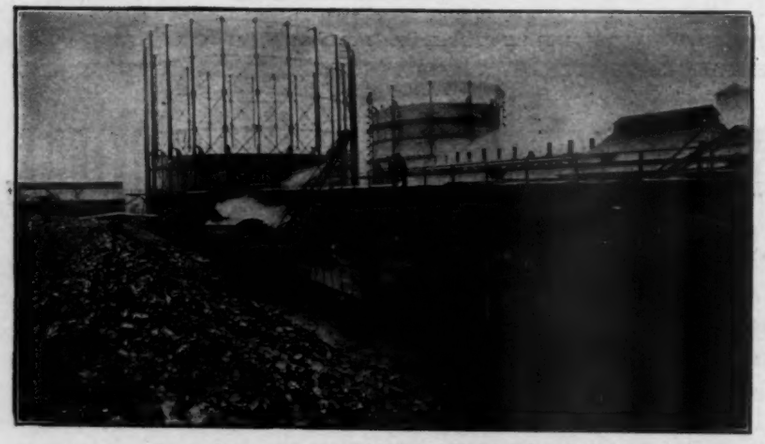
RECORDING GAUGES

FOR ALL RANGES OF PRESSURE AND VACUUM.

Write for New Bulletins.

THE BRISTOL CO., WATERBURY, CONN.

New York, BRANCH OFFICES, Chicago.



WRITE for our Catalogue "O" just issued. This Catalogue deals entirely with "Brownhoist" Machinery as used at Artificial Gas Plants for handling coal, coke and other materials rapidly and economically.

THE BROWN HOISTING MACHINERY COMPANY,

Designers and Builders of All Kinds of Hoisting Machinery.

Main Office and Works:
CLEVELAND, O.

Branch Offices:
NEW YORK AND PITTSBURG.

STANDARD REDUCTION FACTORS FOR GASES,

A Number of Tables Necessary for the Reduction of the Volume of any Gas at any Temperature, Pressure and Degree of Saturation to its Equivalent Volume under Standard Conditions,

TOGETHER WITH

A Table for the Numerical Solution of Certain Exponential Equations,

By HELON BROOKS MacFARLAND, B.S., M.M.E.,

Associate Professor of Applied Mechanics, Department of Mechanical Engineering, Armour Institute of Technology, Chicago, Ills.

PRICE, $1.50. For Sale by

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.

AMERICAN METER CO.,

NEW YORK, ST. LOUIS, PHILADELPHIA, SAN FRANCISCO, CHICAGO,

Photometrical and Experimental Apparatus.

PUBLIC LIGHTING TABLE.

JUNE, 1909.

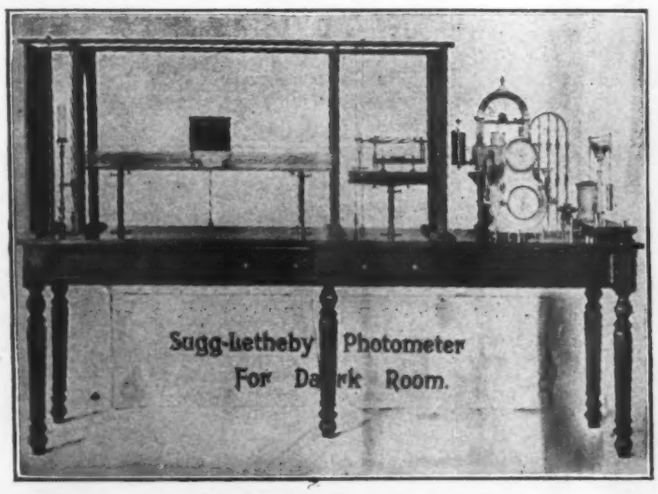
Table No. 1.
FOLLOWING THE MOON.

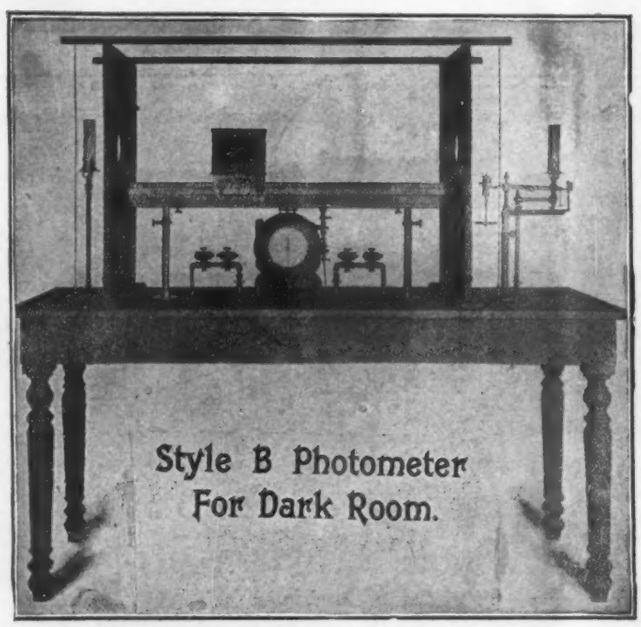
Day of Week.	Date.	Light.	Extinguish.
Tue.	1	2.40AM	3.30AM
Wed.	2	No L.	No L.
Thu.	3	No L.FM	No L.
Fri.	4	No L.	No L.
Sat.	5	7.50PM	10.20PM
Sun.	6	8.00	11.10
Mon.	7	8.00	12.00
Tue.	8	8.00	12.40AM
Wed.	9	8.00	1.20
Thu.	10	8.00LQ	1.50
Fri.	11	8.00	2.20
Sat.	12	8.00	2.40
Sun.	13	8.00	3.10
Mon.	14	8.00	3.30
Tue.	15	8.00	3.30
Wed.	16	8.00	3.30
Thu.	17	8.00NM	3.30
Fri.	18	8.00	3.30
Sat.	19	8.00	3.30
Sun.	20	8.00	3.30
Mon.	21	8.00	3.30
Tue.	22	10.10	3.30
Wed.	23	10.40	3.30
Thu.	24	11.10	3.30
Fri.	25	11.30FQ	3.30
Sat.	26	11.50	3.30
Sun.	27	12.10AM	3.30
Mon.	28	12.40	3.30
Tue.	29	1.10	3.30
Wed.	30	1.50	3.30

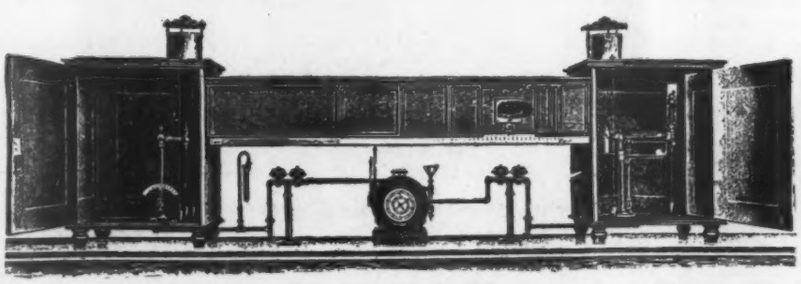
TOTAL HOURS DURING 1909.

By Table No. 1.

	Hrs.Min.
January	212.20
February	183.40
March	173.00
April	151.10
May	144.10
June	138.50
July	145.40
August	160.30
September	180.00
October	201.00
November	216.30
December	233.40
Total, yr.	2140.30







Closed Photometer For Light Room.

CIRCULARS SENT ON REQUEST.

PUBLIC LIGHTING TABLE.

JUNE, 1909.

Table No. 2.
NEW YORK CITY.
ALL NIGHT LIGHTING.

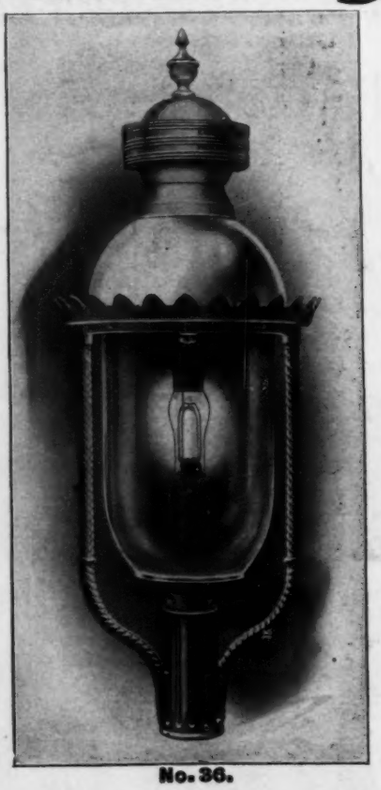
Day of Week.	Date.	Complete Lighting in One Hour	Complete Extinguishing in 50 Minutes
		From Time Given	
		P. M.	A.M.
Tue.	1	7.12	3.17
Wed.	2	7.12	3.17
Thu.	3	7.12	3.17
Fri.	4	7.17	3.12
Sat.	5	7.17	3.12
Sun.	6	7.17	3.12
Mon.	7	7.17	3.12
Tue.	8	7.17	3.12
Wed.	9	7.17	3.12
Thu.	10	7.17	3.12
Fri.	11	7.17	3.07
Sat.	12	7.17	3.07
Sun.	13	7.17	3.07
Mon.	14	7.17	3.07
Tue.	15	7.17	3.07
Wed.	16	7.17	3.07
Thu.	17	7.17	3.07
Fri.	18	7.22	3.07
Sat.	19	7.22	3.07
Sun.	20	7.22	3.07
Mon.	21	7.22	3.07
Tue.	22	7.22	3.07
Wed.	23	7.22	3.07
Thu.	24	7.22	3.07
Fri.	25	7.27	3.07
Sat.	26	7.27	3.07
Sun.	27	7.27	3.07
Mon.	28	7.27	3.07
Tue.	29	7.27	3.07
Wed.	30	7.27	3.07

TOTAL HOURS DURING 1909.

	Hrs.Min.
January	428.30
February	358.15
March	353.10
April	298.10
May	263.20
June	234.45
July	248.30
August	278.00
September	311.25
October	370.05
November	397.40
December	438.35
	3980.25
Deduct on account of 50 min. extinguishing time	30.25
Total, yr.	3950.00

NEW YORK, 318 West 42d Street.
BOSTON, 820 Beacon Building.
PHILADELPHIA, Broad and Arch Streets.
ST. LOUIS, 712 Roe Building.
CHICAGO, 218 La Salle Street.
SAN FRANCISCO, 512 Oak Street.

WELSBACH STREET LIGHTING COMPANY



No. 36.

....OF AMERICA....

Controls and Operates the **Welsbach System of Street Lighting,**

Which includes its specially DESIGNED and PATENTED BURNER for PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

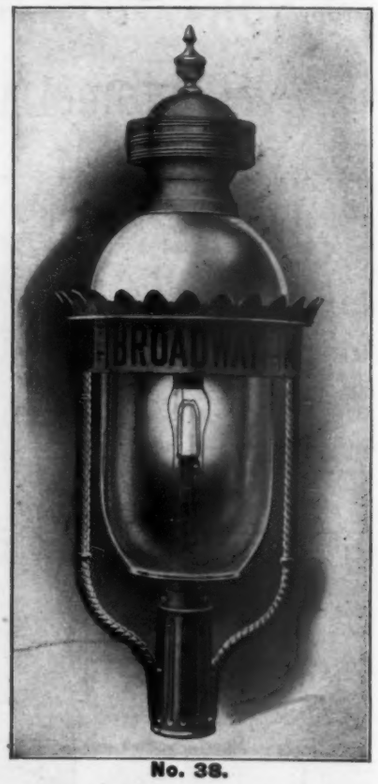
POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.



No. 38.

Welsbach Junior

THE BIGGEST LITTLE LIGHT IN THE WORLD.

The Welsbach Junior Light is 5 inches high--consists of burner, mantle and chimney--and is attractively boxed in a pasteboard carton.

As its effectiveness and economy become better known the Welsbach Junior will supersede, for universal use in the home, the old-style open flame gas burners.

Showing Welsbach Junior Light used in connection with ordinary glass globe.

Gives 50-Candle Power.

Uses Two Feet of Gas per Hour.

Attaches to Any Gas Fixture.

Completely Hidden from View.

Use your own globe--either gas or electric.

SMALL—EFFICIENT—ECONOMICAL.

Welsbach Company, FACTORIES: Gloucester, N. J. Columbus, O.

Salesrooms in all Leading Cities of the United States.

The United Gas Improvement Company,

Broad and Arch Streets, Philadelphia.

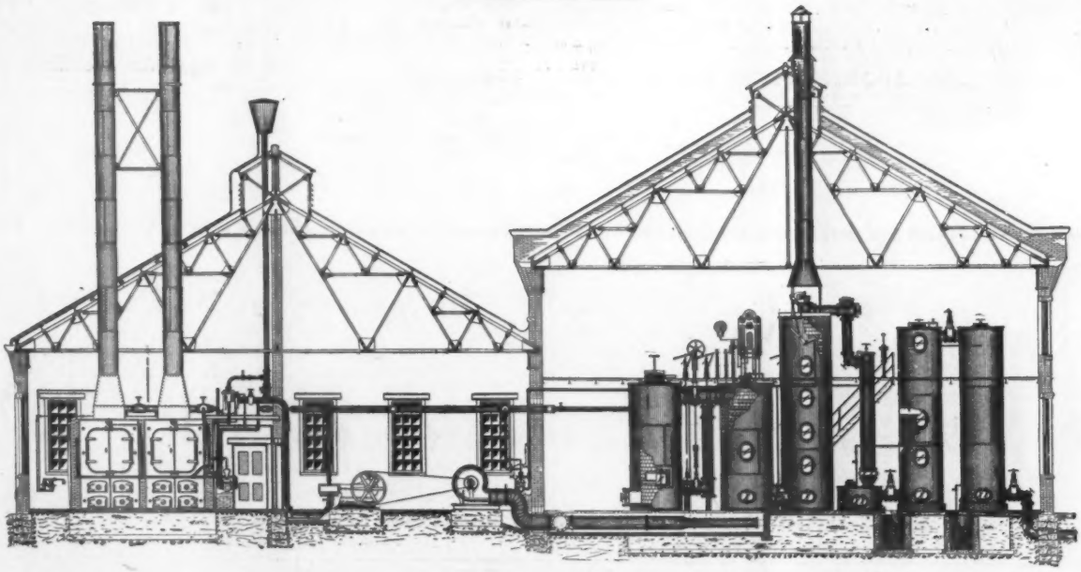
LESSEES, OPERATORS AND BUILDERS OF **GAS WORKS.**

Largest Builders of CARBURETTED WATER GAS PLANT IN AMERICA.

SOLE AMERICAN BUILDERS

OF THE

Standard Double-Superheater Lowe Water Gas Apparatus.



TOTAL SETS INSTALLED TO DECEMBER 31, 1908, ... 690
TOTAL DAILY CAPACITY, TO DECEMBER 31, 1908, ... 558,565,000 cu. ft.

Tar Extractors for Carburetted Water Gas.
Photometrical Apparatus.
Gas Analysis Apparatus.
Recording Gauges.
Straight Standpipe System for Coal Gas Retorts.
Straight Standpipe Cleaners.
Waste Heat Boiler.
Hygrometer.
Meters for Regulating Air and Steam Supply to Water Gas Apparatus.

Established 1858. Incorporated 1890.
CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas.
H. D. ABERNETHY, Sec.

J. H. Gautier & Co.

Greene & Essex Streets,
Jersey City, N. J.

MANUFACTURERS OF

CLAY GAS RETORTS, FIRE CLAY TILES, FIRE BRICK and FIRE CLAY SPECIALTIES.

Ground Fire Clay, Fire Sand and Ground Fire Brick in Barrels and Bulk.

SOLE MANUFACTURERS OF THE

FLEMMING GENERATOR GAS FURNACE

GEROULD'S IMPROVED RETORT CEMENT.

A Cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

Price List, f.o.b NEW CASTLE, PA.

In Casks, 400 to 800 pounds, at 5 cents per pound.
In Kegs, 100 to 200 " " 6 " "
In Kegs less than 100 " " 7 " "

C. L. GEROULD,
29 North Mill St., New Castle, Pa.

Practical Handbook on GAS ENGINES,
With Instructions for Care and Working of the Same,

By G. LIECKFELD, C.E.
Translated with Permission of the Author
By GEO. M. RICHMOND, M.E.

Price, $1. *For Sale by*
AMERICAN GAS LIGHT JOURNAL,
42 Pine st., New York City.

"BEST BY TEST."
ESTABLISHED 1868.

L. N. RANCKE, V. Pres. & Mgr. E. L. RIEHA, Engineer.

BALTIMORE RETORT & FIREBRICK CO.
BALTIMORE, MD.

HIGH GRADE FIRECLAY MATERIAL FOR ALL PURPOSES.

DESIGNERS AND BUILDERS OF

BENCH CONSTRUCTIONS of the MOST DURABLE and EFFICIENT TYPE, WITH EITHER HORIZONTAL, INCLINED OR VERTICAL RETORTS.

SUPERIOR GRADE LININGS AND CHECKERBRICK FOR WATER GAS SETS.

WE SOLICIT YOUR INQUIRIES.

WALDO BROS., 102 Milk St., BOSTON, MASS.,
AGENTS FOR NEW ENGLAND STATES.

LARGE MODERN FACILITIES.
RAIL AND WATER CONNECTIONS TO ALL POINTS.

JOHN DELL,
President and General Manager.

MISSOURI FIRE BRICK CO.,

ESTABLISHED 1882.

MANUFACTURERS OF

Gas Retorts, Bench Settings, Fire Brick, Cupola Linings, Etc.

We are the **Exclusive Agents** *for the* **Mitchell Patent Benches,** *Constructed with Half or Full Depth Furnaces, to Burn either Coal or Coke, and Arranged for Front or* **Rear Clinkering.** *The* **Mitchell** *is the* **Original Coal Firing Bench.** *We also Erect Plain Benches with* **One to Six Retorts.**

YOUR CORRESPONDENCE IS RESPECTFULLY SOLICITED.

City Office: *411 Olive Street, Continental Bank,* ST. LOUIS, MO.

EVENS & HOWARD FIREBRICK COMPANY, ST. LOUIS,
STARTED IN THE BENCH BUSINESS—1856—AS PIONEERS.

RESTARTED, 1908, AFTER A FEW YEARS OF DISCONTINUANCE OF RETORT MAKING.
GAS WORKS DIVISION, ... A. S. B. LITTLE, Engineer.

EXPERT INSPECTION of Holders and Other Structures During Construction.
ECONOMIC DESIGN of Steel Structures, Reinforced Concrete, Masonry and Foundations.
CHAMBERS & HONE, Consulting Engineers, ... 1 Liberty Street, New York City.

POOLE ON FUELS.

THE CALORIFIC POWER OF FUELS.

WITH A VERY FULL COLLECTION OF TABLES OF HEATS OF COMBUSTION OF FUELS, SOLID, LIQUID AND GASEOUS.

TO WHICH IS ALSO APPENDED

THE REPORT OF THE COMMITTEE ON BOILER TESTS OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS, DECEMBER (1897); TABLES OF CONSTANTS USED.

By HERMAN POOLE, F.C.S.

Second Edition. Price $8. For Sale by

A. M. CALLENDER & CO. - - No. 42 Pine Street, New York City.

Bronder Patent Stoking Machinery.

Three-Scoop and Three-Rake Charging and Discharging Machines are operating in New York, Newark, N. J., Philadelphia, Worcester, Mass., Mt. Vernon, N. Y., Toronto and Montreal, Canada, Detroit, Seattle, Rochester and St. Louis.

Four-Scoop and Four-Rake Charging and Discharging Machines are operating in Detroit, Mich., and Cincinnati, Ohio. These are the only machines that will draw or charge simultaneously 3 or 4 retorts (vertically) and handle from 42 to 60 retorts in from 25 to 30 minutes, lid opening and closing and filling of furnaces included.

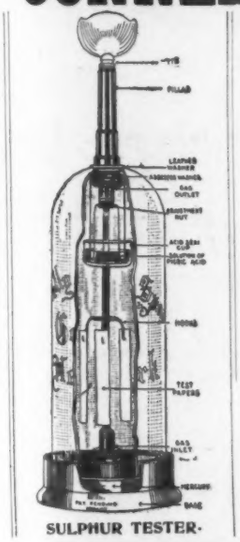
Hot **Coke Conveyor, Quencher and Steam Exhauster,** operating in Toronto, Canada, working in water-sealed flue, rollers being protected from heat and grit.

COAL CRUSHERS, CONVEYORS AND BINS. TURNTABLES FOR MACHINES.

Labor-Saving Machines for Handling Coal and Coke from Coal Cars to Coke Yard or Bins. Coke Screening and Measuring Plants a Specialty.

G. A. BRONDER,
Contracting Engineer and Builder,
229 BROADWAY, NEW YORK.

CONNELLY IRON SPONGE AND GOVERNOR CO.,



SULPHUR TESTER.

Automatic, Balance, High Pressure and Service Governors,
Unison Telemetric Pressure Gauge,
Iron Sponge, Purifying Material for Gas Purification, Manufacturers of Jones Jet Photometers, The National Smoke and Ammonia Helmet, Sulphur Testers, High and Low Pressure House Governors.

Wide Experience in High Pressure Installation and Extension.

PACIFIC COAST AGENT: VAN E. BRITTON, SAN FRANCISCO, CAL.

50 CHURCH ST., NEW YORK CITY.
295 WEST 22D ST., CHICAGO, ILLS.

12-Inch High Pressure Governor.

REYNOLDS' GAS REGULATOR COMPANY,

ANDERSON, IND., U. S. A.

We make all sizes for all classes of reduction,

Double and Single District Stations,
And Individual Service Governors for Reducing High Pressure.

HOLDER GOVERNORS
And Low Pressure Regulators, all of the Dry Diaphragm type.

English Agents:
THE BRYAN DONKIN CO., LTD., Chesterfield, England.

Write for Catalog.

Combination Governor.
(Governor and Mercury Seal.)

Newbigging's Handbook for Gas Engineers and Managers.

Price, $6.50. For Sale by
A. M. CALLENDER & CO., 42 PINE ST., NEW YORK CITY.

COAL TAR AND AMMONIA,

By GEORGE LUNGE, PH.D. Third and Enlarged Edition.
Price, $15. For Sale by
A. M. CALLENDER & CO., 42 Pine Street New York City.

JAMES D. PERKINS, President. F. SEAVERNS, Treasurer.

THE PERKINS COMPANY,

228 and 229 Produce Exchange, New York City.

OCEAN MINE YOUGHIOGHENY GAS COAL,
OLD KENTUCKY SHALE AND O. K. BOGHEAD.

BERWIND-WHITE COAL MINING COMPANY'S

Ocean Westmoreland Gas Coal.

Offices:
Washington Building, New York.
Betz Building, Philadelphia.

STRICTLY High Grade. . . . .
Carefully Prepared.
For Gas Making or
Heavy Steaming. .

A. C. M. AZOY, General Agent, 1 Broadway, New York.

ISAAC C. BAXTER, President. ESTABLISHED 1864. PETER YOUNG, Secretary and Treasurer.

Works, LOCKPORT STATION, PA.

JAMES GARDNER, JR., CO.,
Successor to WILLIAM GARDNER & SON.

Address all communications to JAMES GARDNER, JR., CO., Bolivar, Pa.

Fire Clay Goods for Gas Works.

Double Gate Valves.

A LARGE STOCK ON HAND READY FOR PROMPT SHIPMENT.

These valves are provided with double discs or gates, and are tight with the gas pressure on either side of them.

The discs are so arranged as to be free from their seats when being opened or closed, and are operated by a quick-acting mechanism. The valve stem extends outside of the bonnet, and serves as an index, showing whether the valve is closed or open, and the amount of opening. They are made of the following dimensions:

Size.....	8 inches	10 inches	12 inches	16 inches	20 inches	24 inches	30 inches	36 inches
Diameter of flanges....	13 inches	16 inches	18 inches	22½ inches	27 inches	31 inches	31½ inches	44 inches
Face to face of flange...	12 inches	12 inches	12 inches	14 inches	17 inches	20 inches	21 inches	23⅝ inches

For price and other information, apply to

THE CONTINENTAL IRON WORKS,
P. O. STATION G. NEW YORK (BOROUGH OF BROOK

Directory of American Gas Companies, 1908.

Price, $5.00.
For Sale by
A. M. Callender & Co., 42 Pine St., N. Y.

KELLER ADJUSTABLE COKE CRUSHER.

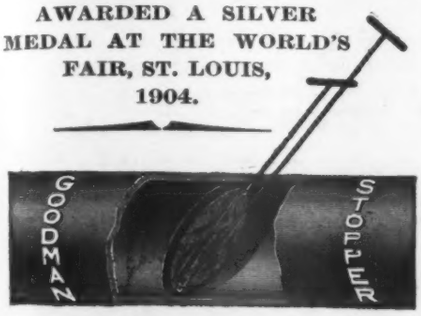
Strong, Simple, Durable. Will Crush any Size Desired.

C. M. KELLER,

Columbus, Ind.

Correspondence Solicited.

AWARDED A SILVER MEDAL AT THE WORLD'S FAIR, ST. LOUIS, 1904.



AGENTS.

Pacific Coast—VAN E. BRITTON, 269 Monadnock Building, San Francisco, Cal.

Great Britain—PARKER & LESTER, Old Kent Road, London.

MANUFACTURED BY

SAFETY GAS MAIN STOPPER CO.,

257-263 East 133d Street,

NEW YORK CITY.

PATENTS, TRADE MARKS, COPYRIGHTS.

ROYAL E. BURNHAM,

Solicitor of Patents and Counsellor in Patent Causes.

833 Bond Building, Washington, D. C.

Send for Pamphlet on Patents.

EDMUND H. McCULLOUGH, President. H. C. ADAMS, Vice-President. CHAS. F. GODSHALL, Treasurer. HENRY WHARTON, Secretary. C. B. NICHOLS, Assistant Secretary.

THE WESTMORELAND COAL CO.

Chartered 1854.

Mines situated on the Pennsylvania and the Baltimore and Ohio Railroads, in Westmoreland County, Pa.

POINTS OF SHIPMENT:

PHILADELPHIA, BALTIMORE, SOUTH AMBOY, N. J., WATKINS (SENECA LAKE), N. Y.

Since the commencement of operations by this Company its well-known Coal has been largely used by the Gas Companies of New England and the Middle States, and its character is established as having no superior in gas-giving qualities, and in freedom from sulphur and other impurities.

Principal Office, 224 South 3d St., Phila., Pa.

GAS MAINS—SERVICE PIPES.

Their installation for High or Low Pressure is the work in which we have specialized for years. Because of our Facilities and Experience, many Gas Companies prefer to contract with us for such work, rather than to execute it themselves. It proves to be as cheap in the end. We solicit inquiries. SULLIVAN BROS.,

Telephone Connection. 11 Main St., Flushing, N. Y.

JOHN CABOT, President. GEO. D. CABOT, Secretary.

1412-1428 Adams Street, Hoboken, N. J.

PURIFIER AND SCRUBBER TRAYS.

Church's Patent Trays,

Reversible; Strongest; Most Easily Repaired.

We also Supply the Cheapest and Strongest

Reversible Bolted Trays.

Special Trays for Iron Oxide in Either Style.

GAS TAPPING MACHINES

—FOR—

Drilling and Tapping Pipe under Pressure

WITHOUT ANY ESCAPE OF GAS.

They are Strong and Compact.

Size of Combination Drills and Taps ¾ to 4-inch.

Machines Sent to any Gas Company for Thirty Days' Trial.

Send for Circulars.

Geo. Light,

DAYTON, O.

AMERICAN GAS ENGINEERING PRACTICE,

A HANDBOOK FOR ALL ENGAGED IN THE INDUSTRY,

Comprising Many Details Not Heretofore Published,

By M. NISBET LATTA, C.E.,

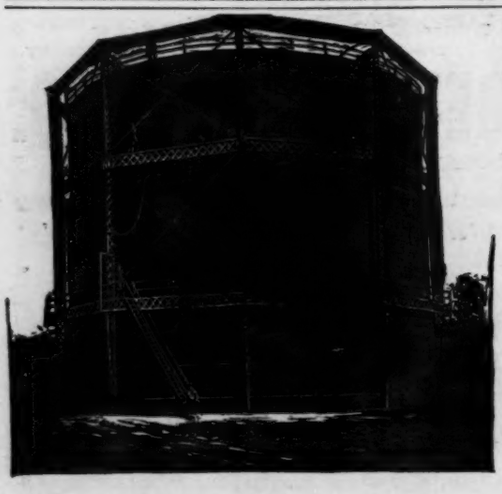
PART I. WATER GAS MANUFACTURE. The Generator. The Carburetter. The Superheater. Wash Box and Tar. Scrubbers. Condensers. Purifiers. Exhausters. Station Meters. Holders. Details of Works' Operation.

" II. GAS DISTRIBUTION. Naphthaline. Mains. Services. Consumers' Meters. Pressure. House Piping. Appliances.

" III. GENERAL TECHNICAL DATA. Properties of Gases. Steam. Mathematical Tables. Conversion Factors. Pipe and Miscellaneous Data.

Price, $4.50. For Sale by

A. M. CALLENDER & CO., 42 PINE ST., NEW YORK CITY.



DAVIS & FARNUM MFG. CO.,

Principal Office and Works, Waltham, Mass.

Single, Double and Triple-Lift Gasholders of any Capacity. Tubular, Pipe and Sinuous Friction Condensers of all Sizes.

Steel Tanks for Gasholders, Iron Roof Frames and Floors, Purifying Boxes, Center Seal or Valve Connections, Bench Work, Reversible Lime Trays.

Self-Sealing and Pressed Steel Mouthpiece Lids.

Coke Barrows, Coal Wagons, and all Apparatus Requisite for a Complete Gas Works.

Also, Gas and Water Pipe, Flanged Pipe, Sugar House Work, and Special Castings of all Descriptions.

H. M. BYLLESBY & COMPANY

(INCORPORATED).

GAS ENGINEERS,

DESIGN, CONSTRUCT AND OPERATE
COMPLETE COAL, WATER AND CRUDE OIL GAS PLANTS.

EXAMINATIONS AND REPORTS.

AMERICAN TRUST BUILDING
CHICAGO.

Oklahoma City, Okla. Mobile, Ala. San Diego, Cal.

ALEX. C. HUMPHREYS, President
WM. W. RANDOLPH, Vice-President.
EMILE GUILLAUDEU, Treasurer.
ROBT. O. LUQUEER, Secretary.
HOWARD E. WHITE, General Counsel.

EUROPEAN CORRESPONDENTS.
HUMPHREYS & GLASGOW,
LONDON. — BRUSSELS.

HUMPHREYS & GLASGOW, INC.,

CONSULTING ENGINEERS.

ADVICE AS TO EXTENSION, MANAGEMENT AND RECONSTRUCTION OF GAS AND ELECTRIC PLANTS.

COMPLETE EXAMINATIONS MADE. ~ ~ ~ PROPERTIES PURCHASED.

CITY INVESTING BUILDING, 165 BROADWAY, NEW YORK.

HENRY I. LEA,

GAS ENGINEER.

DESIGN, CONSTRUCTION AND MANAGEMENT OF GAS PLANTS.

EXAMINATIONS AND REPORTS.

THE ROOKERY, CHICAGO.

McDONALD-MANN QUENCHING CHUTES.

McDonald Mann chutes with cable car in position to receive the quenched coke, Cleveland Gas Light and Coke Co.

Some of the economical advantages of these chutes are:

The coke is quenched in closed bins.
Smaller amount of breeze than by any other method.
Minimum loss from incipient combustion.
Entire absence of steam and gases.
Ease of drawing the coke from the chute into the car.

Gas engineers, both designing and operating, should investigate this method of handling coke, and the names of the nearest Gas works using this system will be furnished to those interested in seeing it in operation.

COAL AND COKE HANDLING MACHINERY IS OUR SPECIALTY.

Send for Catalogue B-1.

C. W. HUNT COMPANY,

WEST NEW BRIGHTON, N. Y. NEW YORK OFFICE, 45 BROADWAY.

Celebrated Lux Gas Purifying Mass

Will Save 50 Per Cent. Labor.

Sole Importer, F. BEHREND,
54 Front St., New York.

The Bartlett-Hayward Company,

Baltimore, Md. 100 Broadway, New York.

GASHOLDERS,

Coal and Water Gas Plants.

Western Representative: W. A. BAEHR, Commercial National Bank Building, Chicago, Ills.

KERR MURRAY MANUFACTURING COMPANY,

Engineers and Manufacturers

APPARATUS FOR COAL GAS PLANTS,

SINGLE AND DOUBLE-LIFT GASHOLDERS
AND STEEL TANKS,

Latest Improved

ROTARY EXHAUSTERS, P. & A. TAR EXTRACTORS, AMMONIA WASHERS,

CONDENSING, SCRUBBING AND PURIFYING APPARATUS.

Street Specials and Valves.

ADDRESS:

KERR MURRAY MANUFACTURING COMPANY, {FORT WAYNE, IND.

R. D. WOOD & CO.,

400 CHESTNUT ST., PHILADELPHIA,

MANUFACTURERS OF

Cast Iron Pipe.

HEAVY LOAM CASTINGS,

Dunham Specials,

Hydraulic Work,

LAMP POSTS, VALVES, ETC.,

Gas Power Plants with Producers.

BUILDERS OF

Gasholders.

Single or Multiple Lifts, with or without Metal Tanks.

PURIFIERS, CONDENSERS, SCRUBBERS, BENCH WORK.

Cutler's Patent Freezing Preventer for Holder Cups.

THE FULTON GAS PRESSURE GOVERNORS

For Artificial or Natural Gas.
For District or Individual Service.

Our Improved **Duplex Sensitive Governor** for district service will reduce high pressure gas to inches of water without variation. Absolutely safe and reliable. No complicated mechanism to get out of order. No auxiliary regulators or other devices to assist the main governor required. The most simple and perfect governor ever placed on the market. We also manufacture Holder Governors, Compressor Governors and Individual Service Governors for any inlet and outlet pressure.

More than 20 years' experience with the largest gas companies. Send for Catalog.

THE CHAPLIN-FULTON MFG. CO.

VAN E. BRITTON, Pacific Coast Agent, Monadnock Bldg., San Francisco, Cal. 28-34 PENN AVE., PITTSBURGH, PA.

COAL TAR AND AMMONIA.

THIRD AND ENLARGED EDITION.

BY

GEORGE LUNGE, PH.D.

Price, $15. For Sale by

A. M. CALLENDER & CO., - - 42 Pine Street, New York City.

THE GAS ENGINEER'S POCKET-BOOK,

By HENRY O'CONNOR,

Comprising Tables, Notes and Memoranda relating to the Manufacture, Distribution and Use of Coal Gas, and the Construction of Gas Works.

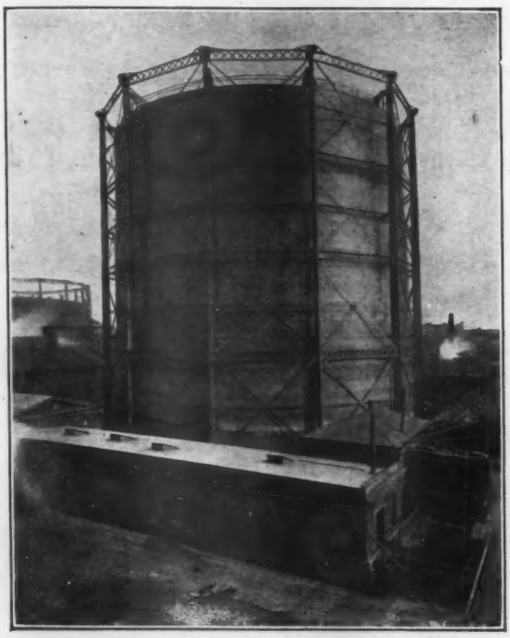
PRICE, $3.50.

FOR SALE BY

A. M. CALLENDER & CO., - No. 42 Pine Street, New York City.

THE STACEY MANUFACTURING COMPANY,

GAS ENGINEERS, DESIGNERS AND BUILDERS.



GAS HOLDERS

Roofs and Structural Steel Work.
Condensers—Washers—Extractors—Purifiers.
Bench Iron—Valves—Cast Iron Fittings and Specials.
Oil, Water and Storage Tanks of Every Description.
Stacks—Stand Pipes—Etc.

"CHOLLAR'S" PATENTED SYSTEM OF GAS PURIFICATION.

GENERAL OFFICES AND WORKS:

(ELMWOOD PLACE STATION)

CINCINNATI.

WESTERN OFFICE:
718 Mission Street, - - - San Francisco, Cal.

THESE BOOKS ARE NEW.

LIQUID AND GASEOUS FUELS,
By Vivian B. Lewes.
334 pages. . . . . Price, $2.

THE GAS ENGINE,
By Forrest R. Jones. 447 pages and 142 cuts. Price, $4.

HEATING,
By W. J. Baldwin.
Price, ... $2.50.

HEAT, ENERGY AND FUELS,
By Oskar Nagel. 306 pages and 118 illustrations. Price, $3.

PRODUCER GAS AND GAS PRODUCERS,
By Samuel S. Wyer. 295 pages. Price, $4.

LAW AND BUSINESS OF ENGINEERING AND CONTRACTING,
By Charles E. Fowler. Price, $2.50.

GAS PIPING AND GAS LIGHTING,
By W. P. Gerhard.
310 pages. . . . . Price, $3.

GAS POWER,
By F. E. Junge, M.A., C.E., M.E.
548 pages. . . . . Price, $5.

GAS, GASOLINE AND OIL ENGINES,
Including Producer Gas Plants.
By Gardner D. Hiscox, M.E. Price, $2.50.

STANDARD WORKS.

GAS MANUFACTURE,
By W. J. A. Butterfield.
Price, ... $2.50.

HANDBOOK ON GAS ENGINES,
By G. E. Lieckfeld, C.E. Translated by George M. Richmond, M.E. Price, $1.

GAS AND GAS WORKS,
By Hughes and O'Connor.
Price, ... $2.50.

CHEMISTRY OF GAS MANUFACTURE,
By Harold M. Royle, F.C.S.
Price, ... $4.50.

GAS MANUFACTURE FOR STUDENTS,
By John Hornby.
Price, ... $1.50.

COAL TAR AND AMMONIA,
By George Lunge.
Price, ... $15.

GAS ANALYST'S MANUAL,
By Jacques Abady.
Price, ... $6.50.

SELF-INSTRUCTION FOR STUDENTS,
Elementary, Advanced, Constructional.
Price, ... Each, $1.50.

MODERN RETORT SETTINGS,
By G. P. Lewis.
Price, ... $1.50.

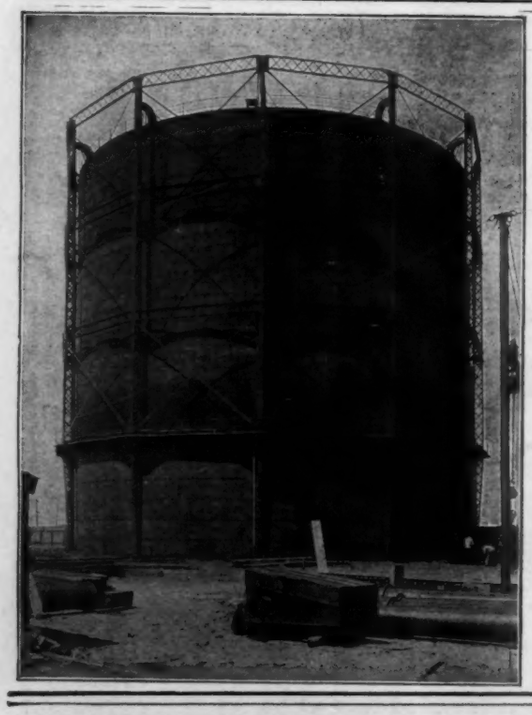
ART OF ILLUMINATION,
By Dr. Louis Bell.
Price, ... $2.50.

GAS COMPANIES' BOOKKEEPING,
By Brearley and Taylor.
Price, ... $4.50.

We will be Glad to Furnish Any Engineering Book.

SEND CHECK, DRAFT, POST OFFICE or EXPRESS MONEY ORDER.

AMERICAN GAS LIGHT JOURNAL, - - 42 PINE STREET, NEW YORK CITY.



JOHN FOWLER, President. J. SCOTT FOWLER, Vice-Pres. & Treas.

DEILY & FOWLER MFG. CO.,

39 Laurel Street, Philadelphia, Pa.

ESTABLISHED 1842. INCORPORATED, 1908.

BUILDERS OF

GASHOLDERS,

Single-Lift or Telescopic,

With or Without Steel Tanks.

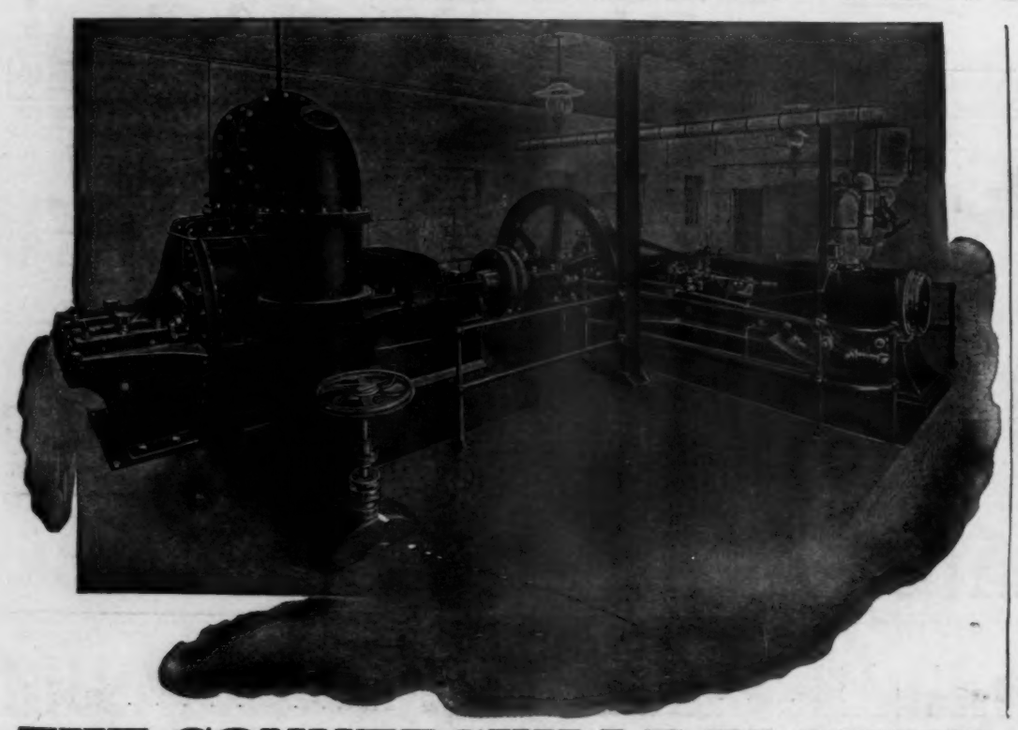
Oil Storage Tanks, Water Tanks, Etc.

ESTIMATES CHEERFULLY FURNISHED.

CORRESPONDENCE SOLICITED.

CONNERSVILLE GAS EXHAUSTERS

AND HIGH PRESSURE GAS PUMPS.



THIS cut shows one of our High Pressure machines and a 4-valve engine connected by one of our leather link flexible couplings. Two of these units were installed for the Peoples Gas Light and Coke Co., Chicago, at their 73d St. Station. Each machine has a capacity of 14,000,000 cubic feet per day.

We also manufacture

GAS VALVES,
BY-PASS VALVES,
PRESSURE REGULATORS,
ETC., ETC.

Correspondence Solicited.

THE CONNERSVILLE BLOWER COMPANY,

Connersville, Indiana, U. S. A.

NEW YORK OFFICE, 50 Church Street. - - HORACE C. COOKE, Selling Agent.

1908 DIRECTORY 1908

OF AMERICAN GAS COMPANIES.

Price, - - - - - - - - - $5.00.

AMERICAN GAS LIGHT JOURNAL, - 42 Pine St., New York City.

D. McDONALD & CO.,

971-997 BROADWAY, ALBANY, N. Y.,

MANUFACTURERS OF

DRY GAS METERS, STATION METERS, PREPAYMENT METERS, METER PROVERS AND GAUGES.

THE GLOVER PREPAYMENT METER,

Simple, Strong, Satisfactory.

THE HINMAN STATION METER DRUM,

The greatest advance that has been made in 20 years in the ACCURATE and ECONOMICAL measurement of gas in large quantities. :: :: ::

NEW YORK OFFICE: 561 West 47th Street. | ALBANY OFFICE: 991 Broadway. | CHICAGO OFFICE: Jefferson and Monroe Streets.

The Sprague Meter Co.

Manufacturers of

Cast Iron Gas Meters

for

Artificial or Natural Gas

Plain or Prepayment

Lower in first cost and cheaper to maintain than any meter on the market.

Write us for particulars.

The Sprague Meter Company

203 Water St., Bridgeport, Conn.

ALCOHOL, Its Manufacture from Farm Products and De-Naturing,

By F. B. WRIGHT.

A NEW AMERICAN BOOK.

CONTENTS.

Chapter 1. Alcohol, its various forms and sources.
" 2. Mashing, cooling and fermentation in general.
" 3. Distillation, simple forms of stills, the production of Alcohol from wine.
" 4. Malting.
" 5. Alcohol from Potatoes, mashing, fermentation, distillations, Continuous stills.
Chapter 6. Alcohol from Grain.
" 7. Alcohol from Beets.
" 8. Alcohol from Sorghum and Molasses.
" 9. De-natured Alcohol and its Commercial uses.
" 10. Alcoholometry. Index.

Fully Illustrated with Original Drawings of Necessary Apparatus.

PRICE, $1. For Sale by

A. . CALLENDER & CO., 42 PINE ST., NEW YORK CITY.

NATHANIEL TUFTS METER COMPANY,

455 Commercial St., Boston, Mass.

PREPAYMENT GAS METERS,
WET AND DRY GAS METERS, STATION METERS, ETC.

REPAIRING OF ALL MAKES OF METERS, AND FITTED WITH OUR PREPAYMENT ATTACHMENT.

B

METERS.

INCREASED CAPACITY.
INCREASED EFFICIENCY.

PREPAYMENT METERS, STATION METERS, METER PROVERS, ETC.

PROMPT AND CAREFUL ATTENTION TO ALL REPAIR WORK.

MARYLAND METER COMPANY,

BALTIMORE. — CHICAGO.

YOU NEED ONE OR MORE OF OUR COMPLAINT METERS.

METERS, Plain and Prepayment,

For Artificial or Natural Gas.

Repairing All Makes and Attachments Added if Desired.

SPECIAL METERS FOR ACETYLENE.

KEYSTONE METER COMPANY,

ROYERSFORD, PA.

JUDICIOUS ECONOMY IS EFFECTED

BY USING

5-L. IMPROVED GAS METERS.

LOW SPEED, LARGE DIAPHRAGMS, STRONGER CONSTRUCTION, LARGER CAPACITY.

FITTED WITH

THE NEW YORK PREPAYMENT ATTACHMENT.

STEEL BOX AND CABINET LOCK.

NEW YORK IMPROVED METER CO., 306-310 East 47th St., New York City.

PACIFIC COAST REPRESENTATIVE: THE NORTHWEST GAS EQUIPMENT CO., Portland, Ore.

AMERICAN METER CO.,

NEW YORK, ST. LOUIS, PHILADELPHIA, SAN FRANCISCO, CHICAGO,

Wet and Dry Gas Meters, Station Meters, Meter Provers,
Photometrical Apparatus, Gauges,

PREPAYMENT METERS,

REGULAR METERS REFITTED WITH PREPAYMENT ATTACHMENTS.

HELME & McILHENNY,

Established 1848. **1339 to 1349 Cherry Street, Philadelphia, Pa.**

MANUFACTURERS OF

Wet and Dry Gas Meters, Station Meters, Provers, Gauges, Etc.

METERS REPAIRED

PREPAYMENT GAS METERS.

Our Own Patents. Strong. Simple. PROMPT ATTENTION. CORRESPONDENCE SOLICITED.

INLET AT TOP.

PATENTED MAY 13, 1902.

STANDARD AND SELF-DRAINING GAS METERS.

PLAIN OR PREPAYMENT FOR ARTIFICIAL OR NATURAL GAS.

LARGE CAPACITY.
LOW SPEED.
STRONG CONSTRUCTION.

REPAIRING OF ALL MAKES OF METERS.

UNITED STATES METER COMPANY,

229 to 269 Chestnut Street, Brooklyn, N. Y.

INLET AT BOTTOM.

PATENTED MAY 13, 1902.

METRIC METAL COMPANY,

MAKERS OF

GAS METERS for NATURAL and ARTIFICIAL GAS.

Special Attention given to Repairing METERS of all Makes.

FACTORY AT ERIE, PA.

JOHN J. GRIFFIN & CO.,

1513 TO 1521 RACE STREET,
PHILADELPHIA.

559 West 47th Street,
NEW YORK.

Jefferson and Monroe Streets,
CHICAGO.

GAS METERS,

Station Meters and Apparatus of Every Description.

REPAIRING CAREFULLY DONE.

THE POSITIVE PREPAYMENT METER.

OVER 600,000 OF THESE PREPAYMENT METERS ARE IN USE IN THE UNITED STATES, AND THE DEMAND IS STEADILY INCREASING.

If you have some ordinary meters to be repaired, send them to us and let us repair and convert them into prepayment meters. They will be a source of satisfaction and profit to you.

SEND FOR OUR CATALOGUE AND OUR PREPAYMENT BOOKLET.